



TETRA TECH, INC.

TECHNICAL MEMORANDUM

Basewide Groundwater Monitoring Program Report
Fall 2005 (Q4)
Installation Restoration Program Site 24
Vandenberg Air Force Base, California

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1.0 INTRODUCTION

This report documents the activities and results of the fall 2005 groundwater monitoring at Installation Restoration Program (IRP) Site 24 (Entomology Wash Rack), Vandenberg Air Force Base (AFB), Santa Barbara County, California. Samples were collected at Site 24 by Tetra Tech, Inc. (Tetra Tech) during November and December 2005. The location of Site 24 is shown on Figure 1.

The groundwater monitoring is being completed in accordance with the Basewide Groundwater Monitoring Program (BGMP) Work Plan (Tetra Tech, Inc. 2000a), the BGMP Health and Safety Plan Addendum (Tetra Tech 2000b), the Basewide Sampling and Analysis Plan (Tetra Tech 2003), the BGMP Quality Assurance Project Plan (QAPP) Addendum (Tetra Tech 2004), the Vandenberg AFB Hazardous Waste Management Plan (U.S. Air Force 2002), and the Waste Management Plan Addendum (Tetra Tech 2005a). Regulatory oversight of the work is being performed by the California Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board—Central Coast Region (RWQCB).

Site background information is summarized in Section 2.0. The scope of work and methodology for groundwater monitoring are presented in Section 3.0. The results of the quarterly monitoring are presented in Section 4.0. Quality Assurance/Quality Control is discussed in Section 5.0. Recommendations for future sampling are presented in Section 6.0.

A description and history of Site 24, including the site characterization portion of the remedial investigation (RI), can be found in the Supplemental RI Report (HydroGeoLogic, Inc. [HGL] 2004a). The results of previous environmental investigations can be found in the RI Report (HGL 2004b).

2.0 BACKGROUND

2.1 SITE DESCRIPTION

Site 24, known as the Entomology Wash Rack, is located in the main cantonment area of the base, west of the railroad spur adjacent to Utah Avenue and south of Nebraska Avenue (Figure 1). The area surrounding Site 24 consists of three general investigation areas/groundwater regions. These three areas/regions are the Southern Area (Region 1), the Western Area (Region 2), and the Northern Area (Region 3) as illustrated on Figure 1.

Region 1 of Site 24 was formerly used for vehicle maintenance, fueling, and washing. Adjacent to the former vehicle maintenance bay was a sump that contained water and was approximately 9 feet long, 6 feet wide, and 6 feet deep. The sump was removed and approximately 120 cubic yards of soil were excavated by the IT Corporation (now known as Shaw Environmental, Inc.) in 2001 (HGL 2004b). The fueling station had an 11,000-gallon steel fuel tank and associated piping that were removed between 1990 and 1992. Building 11193, located southwest of Region 2, was formerly used as a laundry facility. Contamination sources at Site 24 include pesticides in soil around the entomology wash rack, gasoline associated with the abandoned underground storage tank (UST), diesel and chlorinated solvents associated with former maintenance bay and adjacent sump, and chlorinated solvents associated with the former laundry facility. HGL conducted a pilot study in the northeast portion of Region 2 between 9 October 2003 and 6 February 2004 where CL-Out microbes and permanganate were injected into shallow zone injection wells 24-PIW-8-1 and 24-PIW-8-2 (HGL 2004a). Between 19 September 2005 and 21 September 2005, Versar Inc. and ARCADIS installed one new injection well and three new monitoring wells adjacent to the existing injection wells. These contractors injected molasses substrate in the new injection well (24-PIW-8-3) and the two existing injection wells (24-PIW-8-1 and 24-PIW-8-2) on 11 and 12 January 2006. An increase in total organic carbon and a decrease in pH were observed by Versar

during weekly sampling of nearby wells in January 2006 following injection (Versar 2006). For more information on this project; contact the 30 CES/CEVR. Region 3 is the area north of Regions 1 and 2 and hydrologically downgradient from Regions 1 and 2 in the intermediate and deep groundwater zones. Region 3 does not have significant surface development.

2.2 HYDROGEOLOGY

Site 24 is located on an uplifted late-Pleistocene marine terrace within the Burton Mesa physiogeographic province. Groundwater typically occurs unpredictably in small lenses perched on low-permeability layers on Burton Mesa. At the site, the alluvial deposits overlying the bedrock contain three generalized groundwater zones referred to as the “shallow,” “intermediate,” and “deep” zones. All three zones have relatively low groundwater recharge rates and minimal groundwater volume. Groundwater flow occurs primarily through small lenses perched on low-permeability layers; through thin, narrow seams between zones of low permeability; or along the bedrock surface following potential paleochannels in the bedrock erosional topography. Natural recharge to the Site 24 area groundwater is primarily from precipitation. Infiltration from precipitation occurs in all unpaved areas. Some runoff is diverted into storm channels that transport water toward IRP Site 20. Irrigation water southwest, west, and northwest of the Site 24 boundary collects in a drainage “wetlands” and may contribute significantly to the groundwater budget in the Site 24 area.

Shallow groundwater occurs as a perched saturated zone overlying a low-permeability clay layer that is encountered from 15 to 25 feet below ground surface (bgs) in the Site 24 area (HGL 2004a). The shallow groundwater zone does not exist north of Regions 1 and 2 (Figure 2A). Intermediate groundwater overlies another distinct low-permeability clay layer that occurs between 35 and 45 feet bgs (HGL 2004a). The intermediate groundwater zone extends north and west from the Site 24 area into Regions 2 and 3 (Figure 2B). Deep groundwater occurs below the intermediate clay layer from 60 feet bgs down to bedrock (HGL 2004a). The deep groundwater zone occurs throughout Regions 1, 2, and 3 (Figure 2C).

Shallow zone groundwater levels measured in November and December 2005 indicate that groundwater elevations ranged from approximately 444 to 453 feet above mean sea level (msl) (Table 1). The interpreted direction of shallow zone groundwater flow during this timeframe indicates flow in several directions (Figure 2A). Near the southwestern edge of the Site 24 boundary, groundwater flows radially away from a potentiometric high with an average hydraulic gradient of 0.05 feet per foot. Near the northwest trending “unlined drainage route” in Region 2, groundwater flows towards a potentiometric low with an average hydraulic gradient of 0.05 feet per foot.

Intermediate zone groundwater levels measured in November 2005 indicate that groundwater elevations ranged from approximately 420 to 451 feet above msl. During fall 2005, the interpreted direction of intermediate zone groundwater flow at Site 24 was generally to the northeast with an average hydraulic gradient of 0.04 feet per foot in Regions 2 and 3 and generally to the southeast in Region 1 (Figure 2B).

Deep zone groundwater levels measured in November 2005 indicate that groundwater elevations ranged from approximately 392 to 449 feet above msl. During fall 2005, the interpreted direction of deep zone groundwater flow at Site 24 was generally to the northeast with an average hydraulic gradient of 0.02 feet per foot in Regions 2 and 3, to the northwest with an average hydraulic gradient of 0.15 feet per foot on the western edge of Region 3, and to the southeast with an average hydraulic gradient of 0.1 feet per foot in Region 1 and the eastern portion of Region 2 (Figure 2C).

3.0 SCOPE OF WORK

The work performed for the fall 2005 groundwater monitoring at Site 24 included measuring groundwater levels, collecting groundwater for field and laboratory analysis, and preparing this report.

3.1 GROUNDWATER MONITORING

Fifty-six monitoring wells were sampled at Site 24 during fall 2005. Grundfos and MicroPurge pumps were used for purging groundwater from shallow zone wells 24-PMW-1 through 24-PMW-5, 24-PMW-8, 24-PMW-8-2, 24-PIW-8-1, 24-PIW-8-2, 24-PMW-9 through 24-PMW-11, 24-PMW-13, 24-PMW-18, 24-PMW-19, 24-PMW-21, 24-PMW-22, and 24-PMW-26; intermediate zone wells 24-MW-2, 24-MW-3A, 24-MW-5A, 24-MW-8A, 24-MW-8A-2, 24-MW-9A through 24-MW-12A, 24-MW-14A, 24-MW-15A, 24-MW-22A, 24-MW-26A, and 24-MW-28A through 24-MW-30A; and deep zone wells 24-MW-3B through 24-MW-5B, 24-MW-8B through 24-MW-17B, and 24-MW-19B through 24-MW-27B. Duplicate samples were collected from shallow zone wells 24-PMW-1, 24-PMW-10, and 24-PMW-13 and deep zone wells 24-MW-3B, 24-MW-8B, 24-MW-19B, 24-MW-22B, and 24-MW-24B. Deep zone well 24-MW-31B was not sampled due to insufficient water in the well. Intermediate zone wells 24-MW-4A, 24-MW-6, 24-MW-7, and 24-MW-13A were dry and were not sampled. Sampling was conducted in accordance with the documents cited in Section 1.0. Measured groundwater elevations are presented in Table 1, and groundwater contours are illustrated on Figures 2A, 2B, and 2C. Purge records are provided in Appendix A.

In general, wells were purged until a minimum of one pump and tubing volume of water (for MicroPurge pumps) or a minimum of three well volumes of water (for Grundfos pumps) were removed and water quality parameters had stabilized. Criteria for determining stabilization are three successive measurements of temperature within ± 1 degree Celsius, pH within ± 0.1 , conductivity within ± 5 percent, and a turbidity reading of less than 5 nephelometric turbidity units (NTUs). In cases where stability or a turbidity reading of less than 5 NTUs was not obtained, samples were collected after purging a minimum of five pump and tubing volumes of water (for MicroPurge pumps) or a minimum of five well volumes of water (for Grundfos pumps).

3.1.1 MicroPurge Groundwater Sampling

MicroPurge sampling was conducted at shallow zone wells 24-PMW-11 and 24-PMW-19, intermediate zone wells 24-MW-2 and 24-MW-12A, and deep zone wells 24-MW-4B, 24-MW-10B, 24-MW-12B, 24-MW-14B, 24-MW-15B, 24-MW-17B, 24-MW-19B, and 24-MW-23B through 24-MW-25B. Pumping rates were calibrated for each well prior to purging to maintain a static water level (i.e., no drawdown). These dedicated MicroPurge pumps were newly installed for the fall 2005 sampling round. At least five pump and tubing volumes of water were purged from each well, except well 24-MW-12B, before sampling in order to better assess water quality parameters after installation of the MicroPurge systems.

3.1.2 Standard Groundwater Sampling

A 2-inch Grundfos pump was used for purging groundwater from all Site 24 monitoring wells sampled this quarter except those listed in section 3.1.1, which were sampled using dedicated MicroPurge pumps. All Site 24 wells purged with a 2-inch Grundfos pump were sampled after purging a minimum of three well volumes of water, allowing water quality parameters to stabilize, or after sufficient recharge if the well was purged dry. The groundwater in the wells was allowed to sufficiently recharge before the samples were collected with disposable Teflon bailers. Shallow zone wells 24-PMW-2, 24-PMW-26, and

intermediate zone well 24-MW-28A were sampled after purging at least five well volumes of water due to high turbidity.

4.0 RESULTS

Temperature, conductivity, pH, and turbidity were measured in the field during sampling. Readings taken immediately prior to sampling are presented in Table 2. Fixed laboratory analyses were performed by EMAX Laboratories, Inc. in Torrance, California. Samples were analyzed according to the work plan (Tetra Tech 2000a) for dissolved and total metals by U.S. Environmental Protection Agency (EPA) methods SW6010B and SW7470A, total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), and methanol and ethanol by EPA method SW8015B, volatile organic compounds (VOCs) by EPA method SW8260B, 1,4-dioxane by modified EPA method SW8270C with single ion monitoring (SIM) quantitation, semivolatile organic compounds (SVOCs) by EPA method SW8270C, organochlorine pesticides (OCPs) by EPA method SW8081B, and organophosphorous pesticides (OPPs) by EPA method SW8141A. Laboratory analyses and data validation were conducted according to the QAPP Addendum (Tetra Tech 2004). Data validation was performed on 100 percent of the analytical data. Analytical results are presented in Tables 3 through 7 and on Figures 3A, 3B, and 3C. These figures show analytical results from shallow, intermediate, and deep groundwater wells, respectively. Historical data for key contaminants of concern (COCs) are presented in Table 8 and on Figures 4A, 4B, and 4C. These figures show historical data for key COCs from shallow, intermediate, and deep groundwater wells, respectively. Chain-of-custody records are provided in Appendix B.

4.1 METALS

Groundwater collected from 41 of the 56 wells sampled during fall 2005 was analyzed for dissolved metals, and groundwater from 37 of the 56 wells was analyzed for total metals. Groundwater from wells 24-MW-5A, 24-MW-14A, 24-MW-15A, and 24-MW-20B was not analyzed for total metals this quarter due to an insufficient volume of groundwater available after these wells were purged dry and given ample time to recharge. Dissolved metal concentrations were compared to the 95th percentile background threshold values (BTVs) for groundwater (Jacobs Engineering Group, Inc. 1994). Results for dissolved and total metals are presented in Table 3. Results for dissolved metals above BTVs are presented on Figures 3A, 3B, and 3C.

Dissolved aluminum was detected above the BTV of 1,200 micrograms per liter ($\mu\text{g/L}$) and the maximum contaminant level (MCL) of 1,000 $\mu\text{g/L}$ in groundwater from wells 24-PMW-13 and 24-PMW-18 at concentrations of 3,590 $\mu\text{g/L}$ (3,430 $\mu\text{g/L}$ in the duplicate sample) and 1,280 $\mu\text{g/L}$, respectively.

Dissolved antimony was detected above the BTV of 10 $\mu\text{g/L}$ and the MCL of 6 $\mu\text{g/L}$ in groundwater from well 24-MW-10B at a concentration of 47.8 $\mu\text{g/L}$.

Dissolved arsenic was detected above the BTV of 7 $\mu\text{g/L}$ and the MCL of 10 $\mu\text{g/L}$ in groundwater from eight wells in all three groundwater zones. The highest concentration (155 $\mu\text{g/L}$) was detected in groundwater from shallow zone well 24-PMW-8.

Dissolved chromium was detected above the BTV of 20 $\mu\text{g/L}$ and the MCL of 50 $\mu\text{g/L}$ in groundwater from well 24-PMW-8 at a concentration of 74.6 $\mu\text{g/L}$.

Dissolved thallium was detected above the BTV of 1 $\mu\text{g/L}$ and the MCL of 2 $\mu\text{g/L}$ in groundwater from eight wells in all three groundwater zones. The highest concentration (8.24 $\mu\text{g/L}$) was detected in groundwater from intermediate zone well 24-MW-3A.

In addition, dissolved cobalt, iron, lead, mercury, molybdenum, potassium, selenium, silver, sodium, vanadium, and zinc were detected above their respective BTVs in groundwater collected from one or more Site 24 wells.

4.2 TOTAL PETROLEUM HYDROCARBONS

Total petroleum hydrocarbons as gasoline were detected in groundwater from 20 of 41 wells sampled for TPHg (Table 4). The highest concentrations of TPHg were detected in groundwater from shallow zone wells 24-PMW-18 and 24-PMW-1, at concentrations of 38 and 5.1 milligrams per liter (mg/L) (5.4 mg/L in the duplicate sample), respectively (Table 4). Shallow zone wells 24-PMW-1, 24-PMW-2, 24-PMW-18, and 24-PMW-22 were the only Site 24 wells where TPHg concentrations were above the Leaking Underground Fuel Tank (LUFT) action level of 1 mg/L for TPH in groundwater. TPHg detected in groundwater from wells 24-PMW-18, 24-PMW-21, 24-PMW-22, 24-MW-2, 24-MW-8A, 24-MW-8B, 24-MW-10B, 24-MW-13B, 24-MW-14B, 24-MW-16B, 24-MW-17B, and 24-MW-23B are a result of chlorinated hydrocarbons (primarily trichloroethene [TCE], tetrachloroethene [PCE], and *cis*-1,2-dichloroethene [DCE]) in the gasoline range since no benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in groundwater from these wells. TPHg detected in groundwater from well 24-MW-5A were also a result of chlorinated hydrocarbons in the gasoline range since the benzene concentration (0.27 µg/L) was so low compared to the TCE concentration (120 µg/L).

An analysis of the relationship between elevated chlorinated solvent concentrations and TPHg detected in groundwater from well 24-PMW-18 in the absence of BTEX was provided in the summer 2005 report (Tetra Tech 2005b). In this report, it was concluded the high concentrations of TPHg in the absence of BTEX at Site 24 are the result of chlorinated hydrocarbons being measured by method SW8015B in the gasoline range.

Total petroleum hydrocarbons as diesel were detected in groundwater from 17 of 41 wells sampled for TPHd. The highest concentrations of TPHd were detected in groundwater from shallow zone wells 24-PMW-8 and 24-PMW-1 at concentrations of 52 and 2.2 mg/L (2.3 mg/L in the duplicate sample), respectively. TPHd concentrations detected in groundwater from shallow zone wells 24-PMW-1, 24-PMW-8, and 24-PMW-11 were greater than the LUFT action level of 1 mg/L for TPH in groundwater.

Total petroleum hydrocarbon concentrations were similar to those previously detected with the following exceptions. The TPHg concentrations increased in groundwater from shallow zone well 24-PMW-2 from spring 2005 (0.75 mg/L) to summer 2005 (1.7 mg/L) and generally have an increasing trend (Table 8). TPHg were detected for the first time in groundwater from deep zone well 24-MW-16B, but this detection is considered a result of chlorinated hydrocarbons in the gasoline range since no BTEX were detected. TPHd concentrations increased in groundwater from shallow zone well 24-PMW-8 from 1.1 mg/L in summer 2005 to 52 mg/L in fall 2005 (Table 8). The high TPHd detected in groundwater from 24-PMW-8 may be a result of drilling and well development activities at new nearby wells. TPHd results next quarter will be used to evaluate any trends.

4.3 VOLATILE ORGANIC COMPOUNDS

Groundwater collected from all wells sampled during fall 2005 was analyzed for VOCs. VOCs were detected in groundwater samples from 47 of the 56 wells sampled (Table 5).

PCE was detected above the MCL of 5 µg/L in groundwater from 29 of the 56 wells sampled for VOCs. The highest shallow zone concentration was detected in groundwater from well 24-PMW-18 (83,000 µg/L) (Figure 3A). The highest intermediate zone concentration was detected in

groundwater from well 24-MW-26A (1,600 µg/L) (Figure 3B). The highest deep zone concentration was detected in groundwater from well 24-MW-13B (590 µg/L) (Figure 3C).

TCE was detected above the MCL of 5 µg/L in groundwater from 20 of the 56 wells sampled for VOCs. The highest shallow zone concentration was detected in groundwater from well 24-PMW-2 (220 µg/L). The highest intermediate zone TCE concentration was detected in groundwater from well 24-MW-8A-2 (500 µg/L). The highest deep zone TCE concentration was detected in groundwater from well 24-MW-14B (1,000 µg/L).

The compound *cis*-1,2-DCE was detected above the MCL of 6 µg/L in groundwater from 13 of the 56 wells sampled. The highest *cis*-1,2-DCE concentration was detected in the groundwater sample from shallow zone well 24-PMW-8 (130 µg/L). The second highest concentration was detected in intermediate zone well 24-MW-8A-2 (86 µg/L), and the third highest concentration was detected in deep zone well 24-MW-8B (61 µg/L in the parent sample and 59 µg/L in the duplicate sample).

Vinyl chloride was detected above the MCL of 0.5 µg/L in groundwater from 4 of the 56 wells sampled. The highest vinyl chloride concentration (24 µg/L) was detected in the groundwater sample from shallow zone well 24-PMW-3. Vinyl chloride was not detected in the intermediate zone wells and was detected once above the MCL in groundwater from deep zone well 24-MW-5B at a concentration of 3.6 µg/L.

The compound 1,1-DCE was detected above the MCL of 6 µg/L in groundwater from 5 of the 56 wells sampled. The highest concentration (540 µg/L) was detected in the groundwater sample from deep zone well 24-MW-5B. The highest concentration detected in groundwater from the shallow zone wells was 290 µg/L in groundwater from well 24-PMW-4. The highest concentration detected in the intermediate zone wells was 67 µg/L in groundwater from well 24-MW-5A.

The compound 1,1,1-trichloroethane (TCA) was detected above the MCL of 200 µg/L in groundwater from wells 24-PMW-4 and 24-PMW-5 at concentrations of 1,300 and 480 µg/L, respectively.

The compound 1,1,2-TCA was detected above the MCL of 5 µg/L in the groundwater sample from shallow zone well 24-PMW-4 at a concentration of 5.7 µg/L.

The compound 1,1-dichloroethane (DCA) was detected above the MCL of 5 µg/L in groundwater from 5 of the 56 wells sampled. The highest 1,1-DCA concentration (610 µg/L) was detected in the groundwater sample from shallow zone well 24-PMW-4. This compound was also detected at concentrations above the MCL in groundwater from shallow zone wells 24-PMW-1 and 24-PMW-5, intermediate zone well 24-MW-5A, and deep zone well 24-MW-5B.

The compound 1,2-DCA was detected above the MCL of 0.5 µg/L in groundwater from 6 of the 56 wells sampled. The highest 1,2-DCA concentration (260 µg/L) was detected in the duplicate groundwater sample from shallow zone well 24-PMW-1 (250 µg/L in the parent sample). The compound was detected in one deep zone well (24-MW-5B) and one intermediate zone well (24-MW-5A) at concentrations of 7.2 and 0.53 µg/L, respectively, both of which are above the MCL.

Benzene was detected above the MCL of 1 µg/L in groundwater from 3 of the 56 wells sampled. Benzene was only detected in groundwater samples from shallow zone wells. The highest benzene concentrations were detected in the parent and duplicate groundwater samples from shallow zone well 24-PMW-1 (1,000 and 1,100 µg/L, respectively).

The compound *tert*-butanol (TBA) was detected above the California Department of Health Services (DHS) Notification Level (NL) of 12 µg/L in the groundwater samples from shallow zone well 24-PMW-3 at a concentration of 15 µg/L.

The compound 1,4-dioxane was detected above the DHS NL of 3 µg/L in groundwater from shallow zone wells 24-PMW-4 and 24-PMW-5 at concentrations of 310 µg/L and 100 µg/L, respectively; from intermediate zone wells 24-MW-5A at a concentration of 95 µg/L; and from deep zone well 24-MW-5B at a concentration of 790 µg/L (Table 6).

Groundwater samples from 34 wells were analyzed for ethanol and methanol during fall 2005 (Table 4). The sample from shallow zone well 24-PMW-8 contained ethanol and methanol at concentrations of 14 and 1.4 mg/L, respectively.

Significant concentrations of the ketones acetone and 2-butanone were detected in groundwater from wells 24-PIW-8-1, 24-PIW-8-2, and 24-PMW-8. Acetone concentrations in groundwater from these wells ranged from 510 to 1,400 µg/L, and 2-butanone concentrations ranged from 160 to 500 µg/L. These high concentrations appear to be related to the injection of CL-Out bacteria into wells 24-PIW-8-1 and 24-PIW-8-2 as part of the pilot test conducted by HGL during October 2003 and February 2004 (Section 2.1). Specifically, the apparent bloom of anaerobic bacteria that followed the injection may have resulted in anaerobic fermentation, which further reduced the pH in the injection well area and produced ketones (HGL 2004a). Additionally, acetone was detected in groundwater from wells 24-MW-21B and 24-MW-5A at concentrations of 23 µg/L and 5.6 µg/L.

In general, VOC concentrations detected above MCLs during fall 2005 were similar to those previously detected, with the following noteworthy exceptions (Table 8 and Figures 4A, 4B, and 4C). Between summer and fall 2005, the PCE concentration in groundwater from well 24-MW-26A decreased from 3,500 to 1,600 µg/L, which represents a historical low; the PCE concentration in groundwater from shallow zone well 24-PMW-10 increased from 3.4 to 21 µg/L, which represents a historical high; the PCE concentration in groundwater from deep zone well 24-MW-16B was 68 µg/L, which represents a historical high (the only previous detection of PCE in groundwater from this well was in December 2002 at a concentration of 1.1 µg/L). In addition, PCE concentrations in groundwater from shallow zone well 24-PMW-22 and intermediate zone well 24-MW-22A have generally been increasing, while PCE concentrations in groundwater from shallow zone well 24-PMW-8 have decreased below detection.

Between summer and fall 2005, the TCE concentration in groundwater from shallow zone well 24-PMW-5 increased from 33 to 130 µg/L, which represents a historical high; TCE was not detected in groundwater from shallow zone well 24-PMW-18. This is due to the detection limit being raised by dilution performed to analyze for PCE at a very high concentration (83,000 µg/L). TCE is still believed to be present in groundwater from this well and the laboratory will take additional steps to quantify it during future sampling rounds. TCE concentration detected in groundwater from intermediate zone well 24-MW-26A decreased from 23 to 11 µg/L, which represents a historical low. In addition, TCE concentrations in groundwater from shallow zone well 24-PMW-8 have generally been decreasing.

Between summer and fall 2005, the *cis*-1,2-DCE concentration in groundwater from deep zone well 24-MW-20B increased to a level above the MCL of 6 µg/L, from 0.46 to 7.3 µg/L, which represents a historical high; the *cis*-1,2-DCE concentration in groundwater from deep zone well 24-MW-21B increased from 15 to 22 µg/L, which represents a historical high. The compound *cis*-1,2-DCE was not detected in groundwater from shallow zone wells 24-PMW-18 and 24-PMW-22. This is due to the detection limit being raised by dilution performed to analyze for PCE at very high concentrations (83,000 and 23,000 µg/L). The compound *cis*-1,2-DCE is still believed to be present in groundwater from these wells and the laboratory will take additional steps to quantify it during future sampling rounds. The

cis-1,2-DCE concentrations detected in groundwater from intermediate zone well 24-MW-26A decreased to a historical low of 6.5 µg/L.

Vinyl chloride was detected for the first time in groundwater from shallow zone well 24-PMW-8 during fall 2005 at a concentration of 9.5 µg/L, which represents a historical high and is well above the MCL of 0.5 µg/L. In addition, the vinyl chloride concentration in deep zone well 24-MW-5B has generally been increasing.

The 1,1,1-TCA concentration in groundwater from shallow zone well 24-PMW-5 decreased from 1,800 to 480 µg/L between summer and fall 2005, which represents a historical low. Concentrations of 1,1,2-TCA decreased to below the MCL for the first time since December 2002 in groundwater from shallow zone well 24-PMW-5.

4.4 SEMIVOLATILE ORGANIC COMPOUNDS

Groundwater samples from 35 of the 56 wells sampled during fall 2005 were analyzed for SVOCs. This compounds benzoic acid, 4-methylphenol, and phenol were detected in groundwater from well 24-PMW-8 at a concentrations of 2,300 µg/L, 1,100 µg/L, and 2,900 µg/L, respectively. 2-Methylnaphthalene was detected in the parent sample from well 24-PMW-1 at a concentration of 6.7 µg/L. The compound bis (2-ethylhexyl) phthalate was detected above the MCL of 4 µg/L in groundwater from four wells (Table 6). The compound is a common laboratory contaminant, and these results are strongly suspected to be due to laboratory contamination.

4.5 PESTICIDES

Groundwater samples collected from shallow zone wells 24-PMW-1, 24-PMW-2, and 24-PMW-3 were analyzed for OCPs and OPPs. Seven OCPs were detected in groundwater from well 24-PMW-1 (Table 7). OPPs were not detected in any of the groundwater samples.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

All of the analytical data presented in this report have been validated according to the QAPP Addendum (Tetra Tech 2004). The data validation process includes review of sample preservation, temperature, and hold times; detection and quantitation limits; instrument calibration; and equipment blank, trip blank, method blank, laboratory control sample, and matrix spike/matrix spike duplicate. Data validation qualifiers and comments are provided on the data tables to indicate the results of the data validation and to quantitatively indicate the usability of the data. In addition, field sampling records are reviewed to assess the potential for any field conditions to adversely impact the data quality.

Several analytical results for zinc were qualified for blank contamination due to their presence in the associated blanks. In addition, a holding time violation occurred for phenol in the parent and duplicate samples from well 24-MW-22B. These discrepancies are considered minor and do not significantly impact the data quality or interpretations presented in this report. The data quality objectives for the fall 2005 sampling at Site 24 were achieved.

6.0 RECOMMENDATIONS

In the summer 2005 Groundwater Monitoring Report, Tetra Tech, and the Air Force made the following recommendations:

1. Discontinue sampling of historically dry wells 24-MW-4A and 24-MW-13A under the BGMP. Continue quarterly monitoring of groundwater elevations in these wells for use in preparing groundwater elevation contour maps. The RWQCB and DTSC concurred with this recommendation.
2. Remove total metal analysis from all site wells. The RWQCB and DTSC concurred with this recommendation.
3. Reduce dissolved metal sampling frequency from quarterly to semiannually during winter and summer quarters. The RWQCB and DTSC concurred with this recommendation.
4. Reduce the dissolved metal analyte list to only include metals identified as chemicals of potential concern (COPCs) in the Human Health Risk Assessment (HHRA) and dissolved metals that were detected above MCLs and BTVs in the same wells (these include aluminum, antimony, arsenic, cadmium, selenium, and thallium). The RWQCB and DTSC concurred with this recommendation.
5. Remove TPHg analysis for wells 24-PMW-10, 24-PMW-11, 24-MW-3A, 24-MW-10A, 24-MW-12A, 24-MW-14A, 24-MW-15A, 24-MW-3B, 24-MW-4B, 24-MW-22A, 24-MW-11B, 24-MW-12B, 24-MW-15B, 24-MW-16B, 24-MW-22B, and 24-MW-24B. The RWQCB and DTSC concurred with this recommendation.
6. Remove TPHg analysis for wells 24-PMW-13, 24-PMW-21, 24-MW-2, 24-MW-5A, 24-MW-8A, 24-MW-11A, 24-MW-8B, 24-MW-10B, 24-MW-13B, 24-MW-14B, 24-MW-17B, 24-MW-19B, 24-MW-20B, 24-MW-21B, and 24-MW-23B. The RWQCB and DTSC concurred with this recommendation.
7. Remove methanol and ethanol analysis from all wells except shallow zone wells 24-PMW-1, 24-PMW-2, 24-PMW-3. The RWQCB and DTSC concurred with this recommendation.
8. Remove SVOC analysis for all wells except the shallow zone wells and intermediate zone wells 24-PMW-1, 24-PMW-2, 24-PMW-3, 24-PMW-4, and 24-PMW-5, which are located within the Site 24 boundary and south of Building 11343, and well 24-PMW-8, which is located in the molasses injection pilot study area. The RWQCB and DTSC concurred with this recommendation.

Recommendations for the fall 2005 Groundwater Monitoring Report are presented below:

1. Pursuant to recommendations for sampling for emergent compounds under the BGMP from the Final Supplemental Basewide Preliminary Assessment (PA) for Identification of Emergent Compounds of Concern Usage prepared by Metcalf & Eddy (M&E 2005), Tetra Tech and the Air Force recommend adding a screening round of analysis for 1,2,3-trichloropropane (TCP) for wells 24-PMW-4, 24-PMW-5, 24-MW-5A, 24-MW-5B, 24-MW-8A, 24-MW-8B, 24-PMW-8, 24-MW-11A, 24-MW-14B, 24-PMW-18, 24-MW-26A, 24-MW-26B during spring 2006. During the sampling round following collection of TCP screening samples, Tetra Tech and the Air Force recommend that TCP analysis be discontinued for wells in which TCP is not detected.

For wells in which TCP is detected, Tetra Tech and the Air Force recommend continued sampling at the same frequency as for VOCs.

2. Pursuant to recommendations for sampling for emergent compounds under the BGMP from the Final Supplemental Basewide PA for Identification of Emergent Compounds of Concern Usage prepared by Metcalf & Eddy (M&E) (M&E 2005), Tetra Tech and the Air Force recommend adding a screening round of analysis for 1,4-dioxane for wells 24-PMW-4, 24-PMW-5, 24-MW-5A, 24-MW-5B, 24-MW-8A, 24-MW-8B, 24-PMW-8, 24-MW-11A, 24-MW-14B, 24-PMW-18, 24-MW-26A, and 24-MW-26B during spring 2006. During the sampling round following collection of 1,4-dioxane screening samples, Tetra Tech and the Air Force recommend that 1,4-dioxane analysis be discontinued for wells in which 1,4-dioxane is not detected. For wells in which 1,4-dioxane is detected, Tetra Tech and the Air Force recommend continued sampling at the same frequency as for VOCs.
3. Tetra Tech and the Air Force recommend removing TPHg analysis for well 24-PMW-18. A review of the TPHg chromatogram from summer 2005 and the SW8260B results for the sample from well 24-PMW-18, which had the highest concentration of TPHg for all Site 24 wells during that quarter, indicated very high concentrations of chlorinated hydrocarbons, the absence of benzene and ethylbenzene associated with gasoline, and very low concentrations of toluene (1.4 µg/L) and *o*-xylene (0.27 µg/L) (Tetra Tech 2005b: 5). Therefore, high concentrations of TPHg in the absence of significant concentrations of BTEX in groundwater from well 24-PMW-18 are a result of chlorinated hydrocarbons that are being measured by method SW8015B in the gasoline range.
4. Tetra Tech and the Air Force recommend reducing the TPHd sampling frequency for shallow zone well 24-PMW-22 from quarterly to annually during the winter quarters beginning with the spring 2006 sampling round. TPHd have not been detected in groundwater from this well during the last five quarters (Table 8). Well 24-PMW-22 has not been historically within the plume. Well 24-PMW-22 is downgradient from the former fueling area, located near well 24-PMW-1, where TPHd have been detected above the LUFT action level for TPH in groundwater of 1 mg/L (Figure 2A). Annual sampling for TPHd is recommended so the migration of TPHd from the former fueling area to the area near well 24-PMW-22 can be monitored. Winter quarters were selected for annual TPHd analysis because well 24-MW-22A is sampled semiannually for metals during winter and summer quarters.
5. Tetra Tech and the Air Force recommend removing TPHd analysis for intermediate zone well 24-MW-3A beginning with the spring 2006 sampling round. TPHd have not been detected in groundwater from this well during the last five quarters (Table 8). Well 24-MW-3A has not been historically within the plume. Additionally, the Final RI Report (HGL 2004b: Figures 4.7 and 4.8) indicates a localized, intermediate perched zone was identified in the vicinity of well 24-MW-3A; this perched zone is isolated from areas where TPHd have been detected above LUFT action level for TPH in groundwater (shallow zone wells 24-PMW-1, 24-PMW-8, and 24-PMW-11).
6. Tetra Tech and the Air Force recommend reducing the TPHd sampling frequency for intermediate zone well 24-MW-8A from quarterly to annually during the winter quarters beginning with the spring 2006 sampling round. TPHd have not been detected in groundwater from this well during the last five quarters (Table 8). Annual sampling for TPHd is recommended to monitor for vertical migration of TPHd from upgradient well 24-PMW-8 (HGL 2004b: Figure 4.12). Winter quarters were selected for annual TPHd analysis since well 24-MW-22A is sampled semiannually for metals during winter and summer quarters.

7. Tetra Tech and the Air Force recommend reducing the TPHd sampling frequency for intermediate zone well 24-MW-12A from quarterly to semiannually during the winter and summer quarters beginning with the spring 2006 sampling round. TPHd concentrations were below the LUFT action level for TPH in groundwater (1 mg/L) during the last five quarters and have been generally decreasing (Table 8). Well 24-MW-12A is an upgradient well (Figure 2B); sampling for TPHd semiannually would be adequate for monitoring TPHd concentrations in this area. Winter and summer quarters were selected to coincide with semiannual sampling for metals.
8. Tetra Tech and the Air Force recommend reducing the sampling frequency for intermediate zone wells 24-MW-14A and 24-MW-15A from quarterly to semiannually during the winter and summer quarters beginning with the spring 2006 sampling round. We recommend continuing to monitor water levels in these wells quarterly for use in groundwater elevation contouring. Key VOC concentrations were below MCLs, and TPHd concentrations were below the LUFT action level for TPH in groundwater in groundwater samples from these wells during the last five quarters (Figure 4B and Table 8). Figures in the Final RI Report illustrate that these wells monitor the same perched groundwater zone (HGL 2004b: Figures 4.7 and 4.14) and have similar groundwater elevations (Table 1 and Figure 2B). Sampling these wells semiannually would be adequate for monitoring TPHd and VOC concentrations in this area. Winter and summer quarters were selected for semiannual analysis since these wells are being sampled semiannually for metals during winter and summer quarters, and concentrations of PCE, a key VOC, have often been higher during winter quarters.
9. Tetra Tech and the Air Force recommend removing TPHd analysis for intermediate zone well 24-MW-14A beginning with the spring 2006 sampling round. TPHd were not detected in groundwater from this well during the last five quarters (Table 8). This well has not historically been in the plume; this well is a downgradient well. TPHd has not been detected in groundwater from well 24-MW-15A, immediately upgradient of well 24-MW-14A; however, if TPHd are detected in groundwater from well 24-MW-15A during future samplings rounds, TPHd analysis may be reinstated for well 24-MW-14A.
10. Tetra Tech and the Air Force recommend reducing the TPHd sampling frequency for intermediate zone well 24-MW-22A from quarterly to annually during the winter quarters beginning with the spring 2006 sampling round. TPHd were not detected in groundwater from this well during the last five quarters (Table 8). Annual sampling for TPHd is recommended to monitor for vertical migration of TPHd from shallow groundwater zone below former fueling station (near well 24-PMW-1) to the intermediate groundwater zone; TPHd were detected in groundwater from well 24-PMW-1 above the LUFT action level for TPH in groundwater of 1 mg/L. Winter quarters were selected for annual TPHd since well 24-MW-22A is sampled semiannually for metals during winter and summer quarters.
11. Tetra Tech and the Air Force recommend reducing the sampling frequency for intermediate zone well 24-MW-30A from quarterly to annually during the winter quarters beginning with the spring 2006 sampling round. VOCs have not been detected above MCLs during the past five quarters (Table 8). PCE, the only key COC detected during the past five quarters in groundwater from this well, was detected during spring and fall 2005 at concentrations of 0.86 and 0.64 µg/L, respectively. Tetra Tech and the Air Force recommend continuing quarterly monitoring of water levels in this well for use in groundwater elevation contouring. Well 24-MW-30A historically has not been in the plume and is upgradient from the plume. Winter quarters were selected for annual analysis since concentrations of PCE, a key VOC, have often been higher during winter quarters.

12. Tetra Tech and the Air Force recommend reducing the TPHd sampling frequency for deep zone well 24-MW-3B from quarterly to annually during the winter quarters beginning with the spring 2006 sampling round. TPHd were not detected in groundwater from this well during the last five quarters (Table 8). Annual sampling for TPHd is recommended to monitor for vertical migration of TPHd from areas with TPHd groundwater concentrations above the LUFT action level for TPH in groundwater (near shallow zone wells 24-PMW-1, 24-PMW-8, and 24-PMW-11). Winter quarters were selected for annual TPHd analysis since well 24-MW-3B is being sampled semiannually for metals during winter and summer quarters and concentrations of PCE, a key VOC, have often been higher during winter quarters.

All recommendations were developed in accordance with the Air Force Center for Environmental Excellence Long-Term Monitoring Optimization Guide (U.S. Air Force 1997) and the decision tree developed by Tetra Tech for the BGMP at Vandenberg AFB (Tetra Tech 2002).

The winter 2006 sampling will be conducted according to the work plan (Tetra Tech 2000a).

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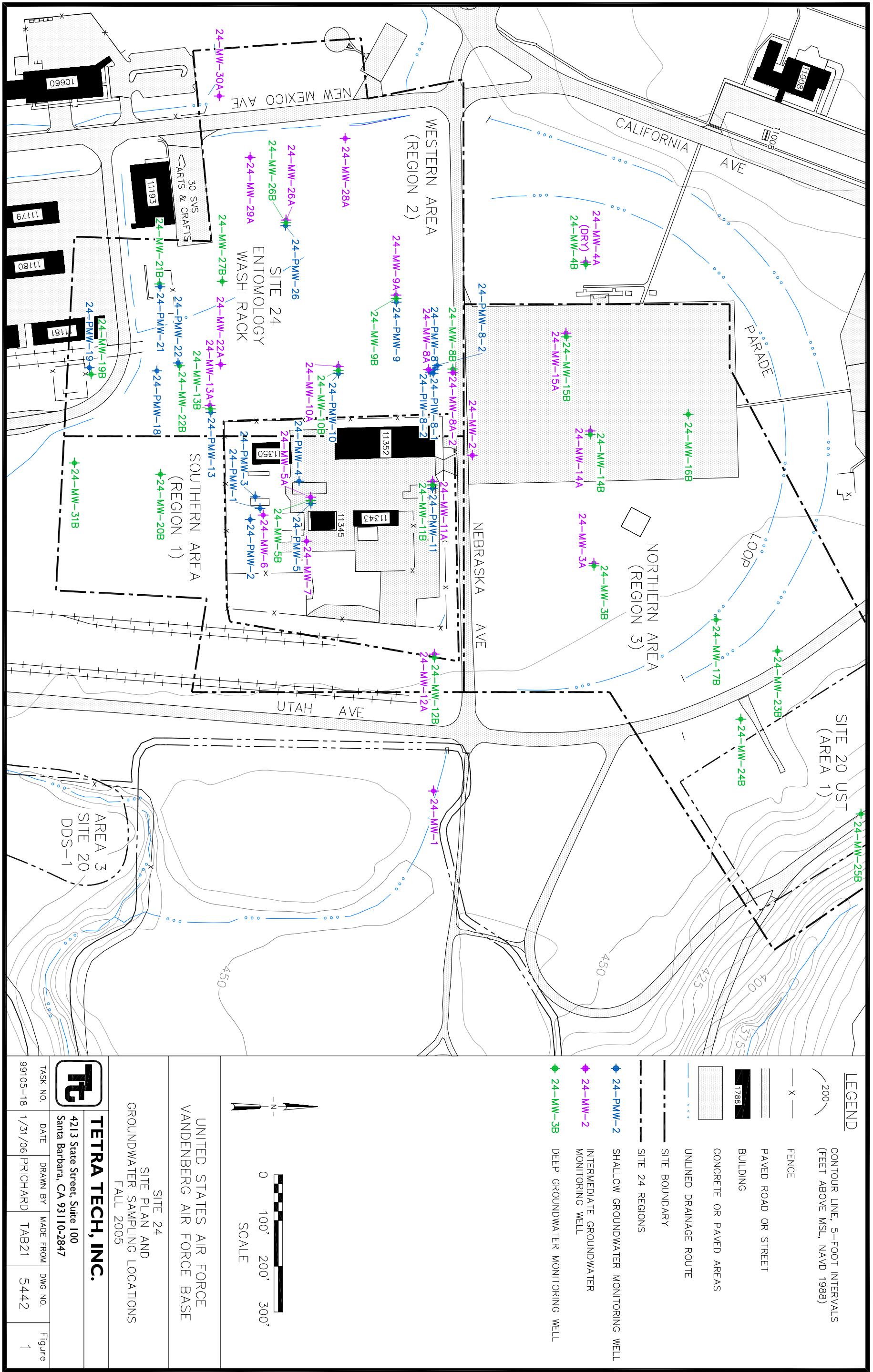
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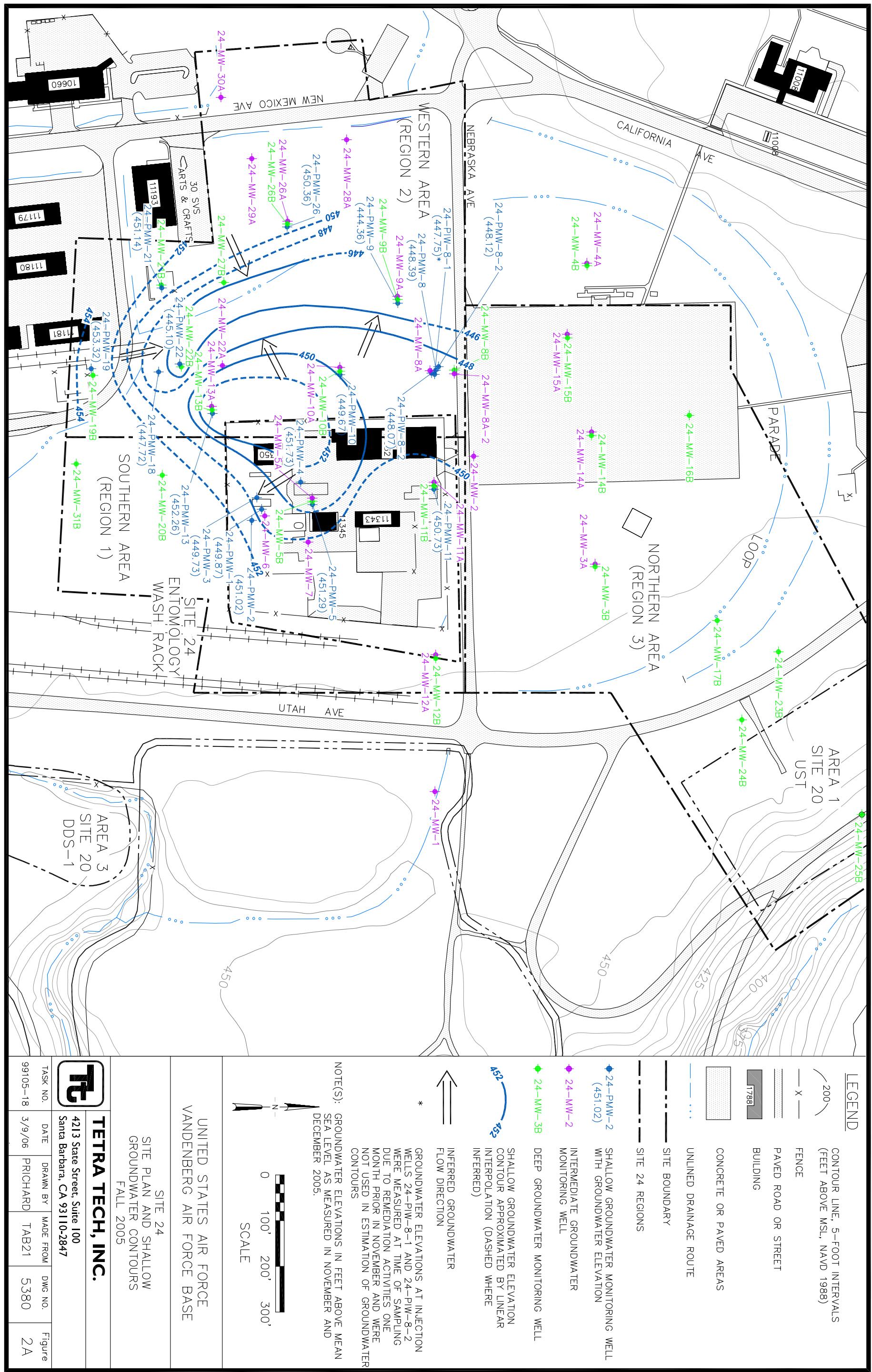
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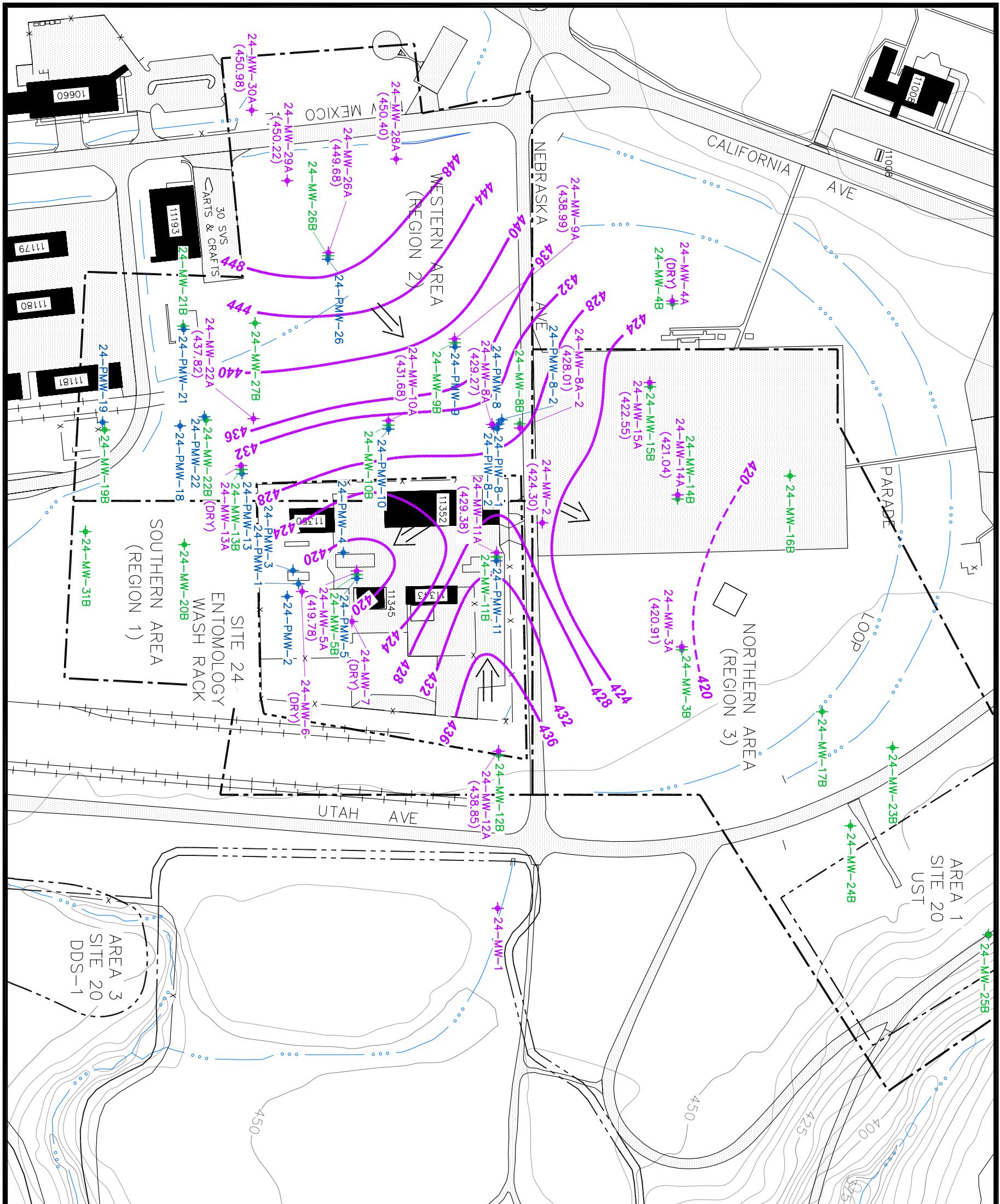
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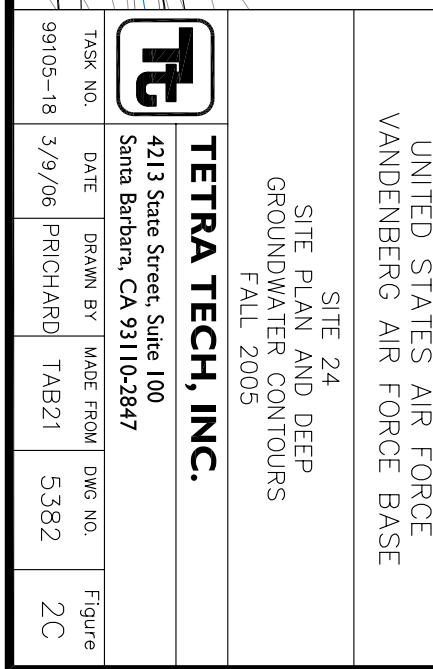
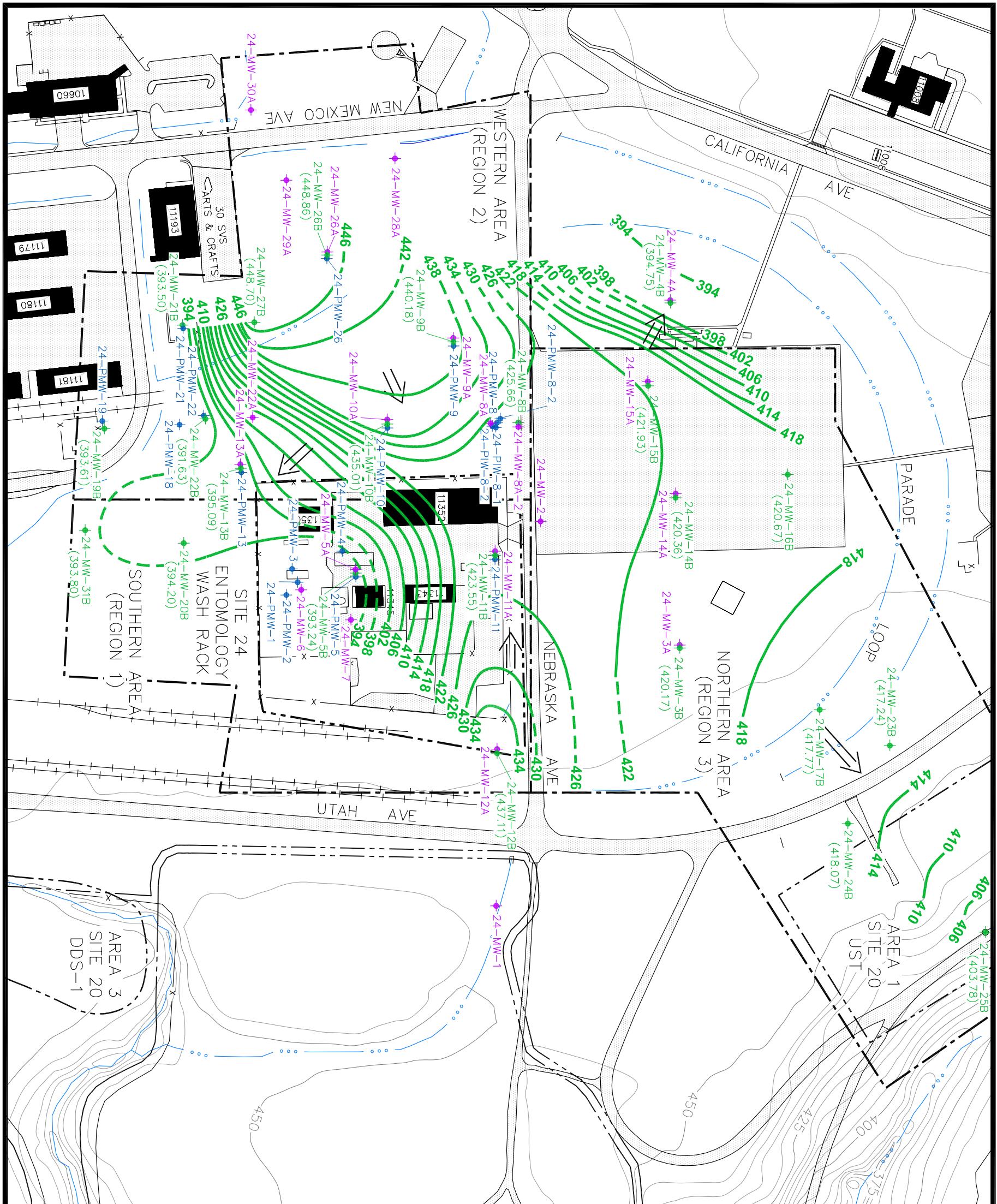
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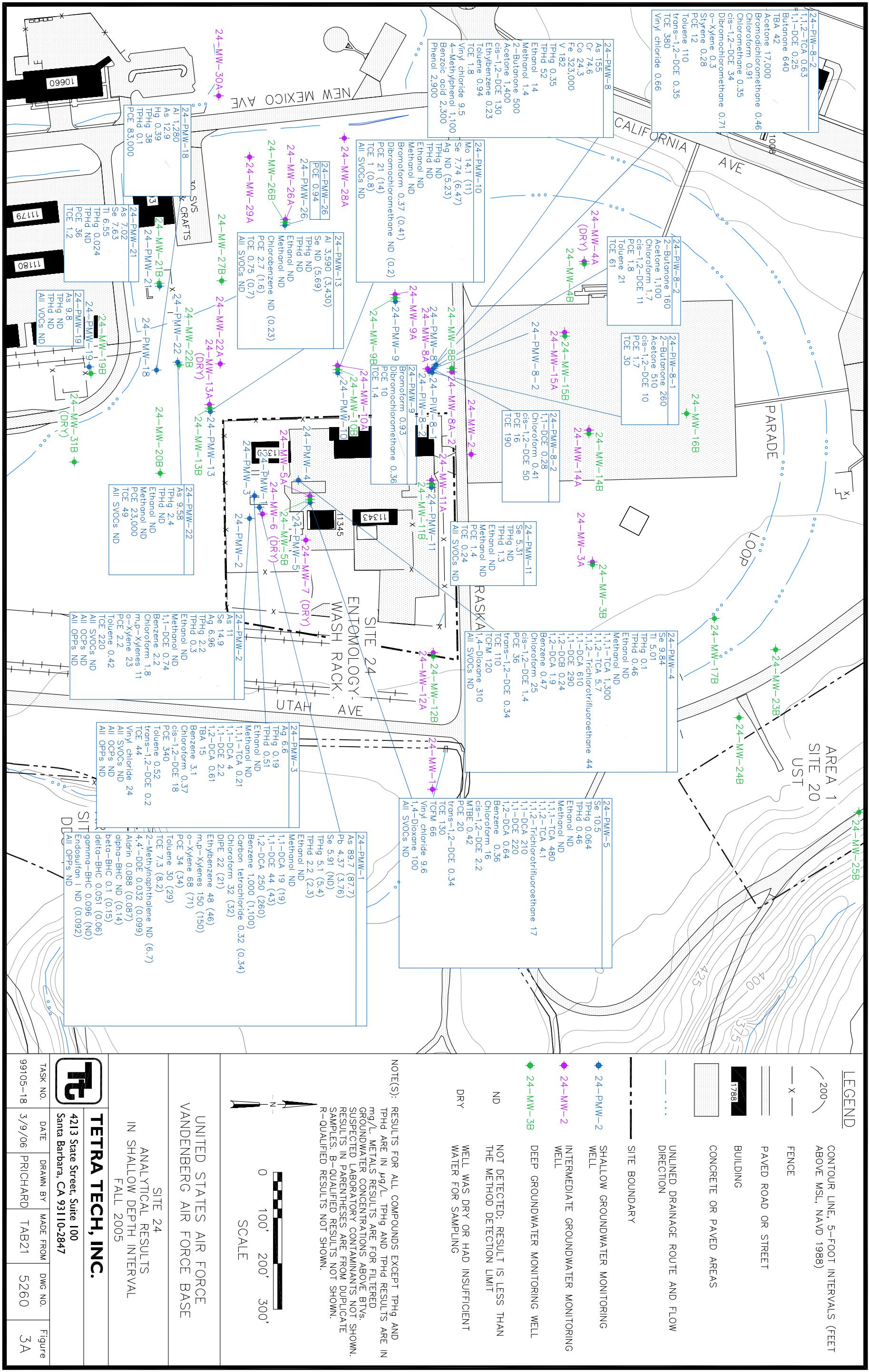




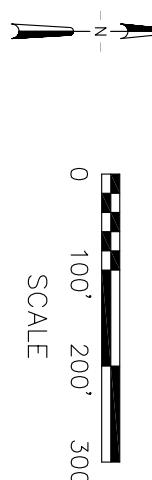


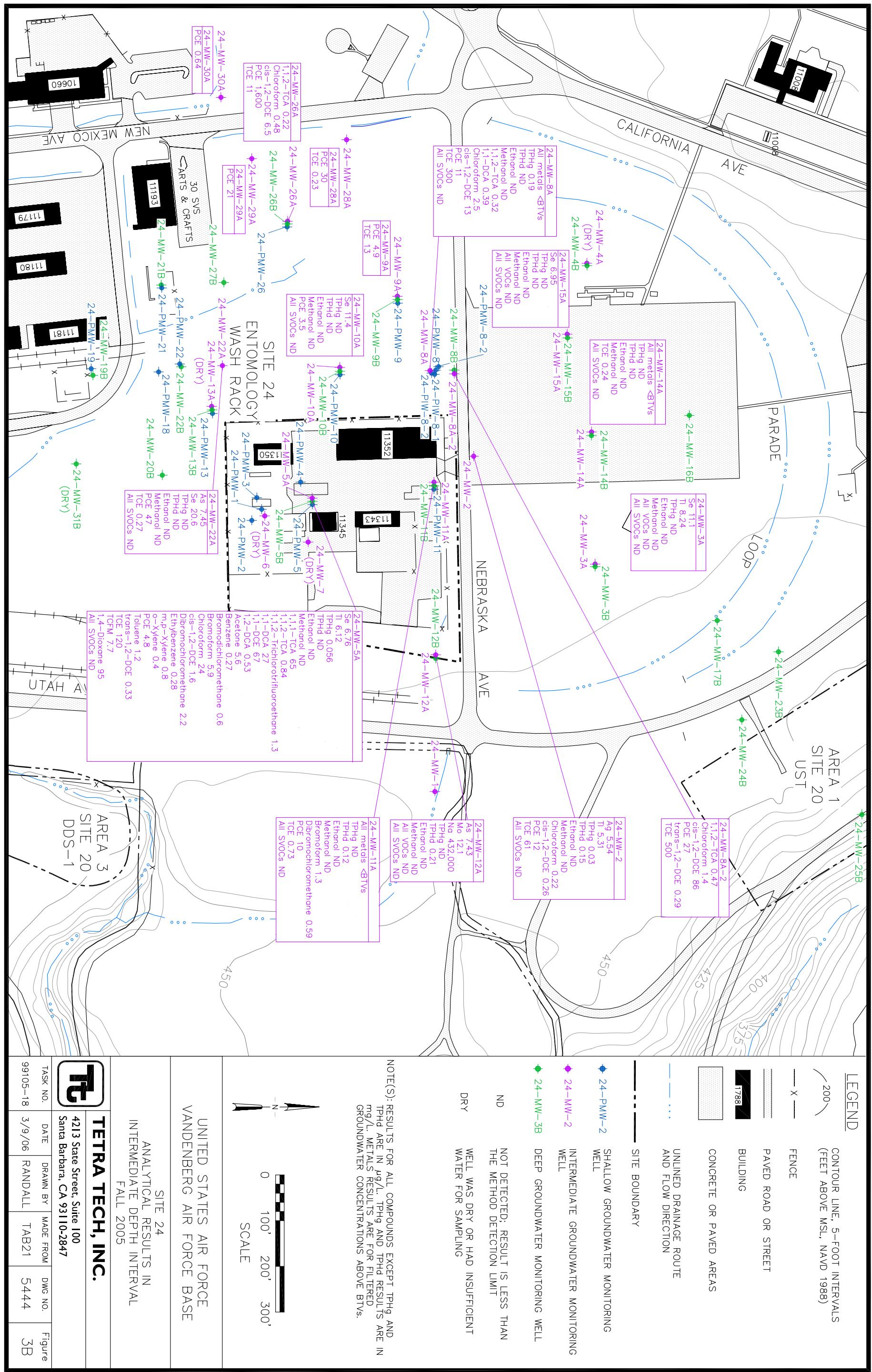
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4213 State Street, Suite 100 Santa Barbara, CA 93110-2847					
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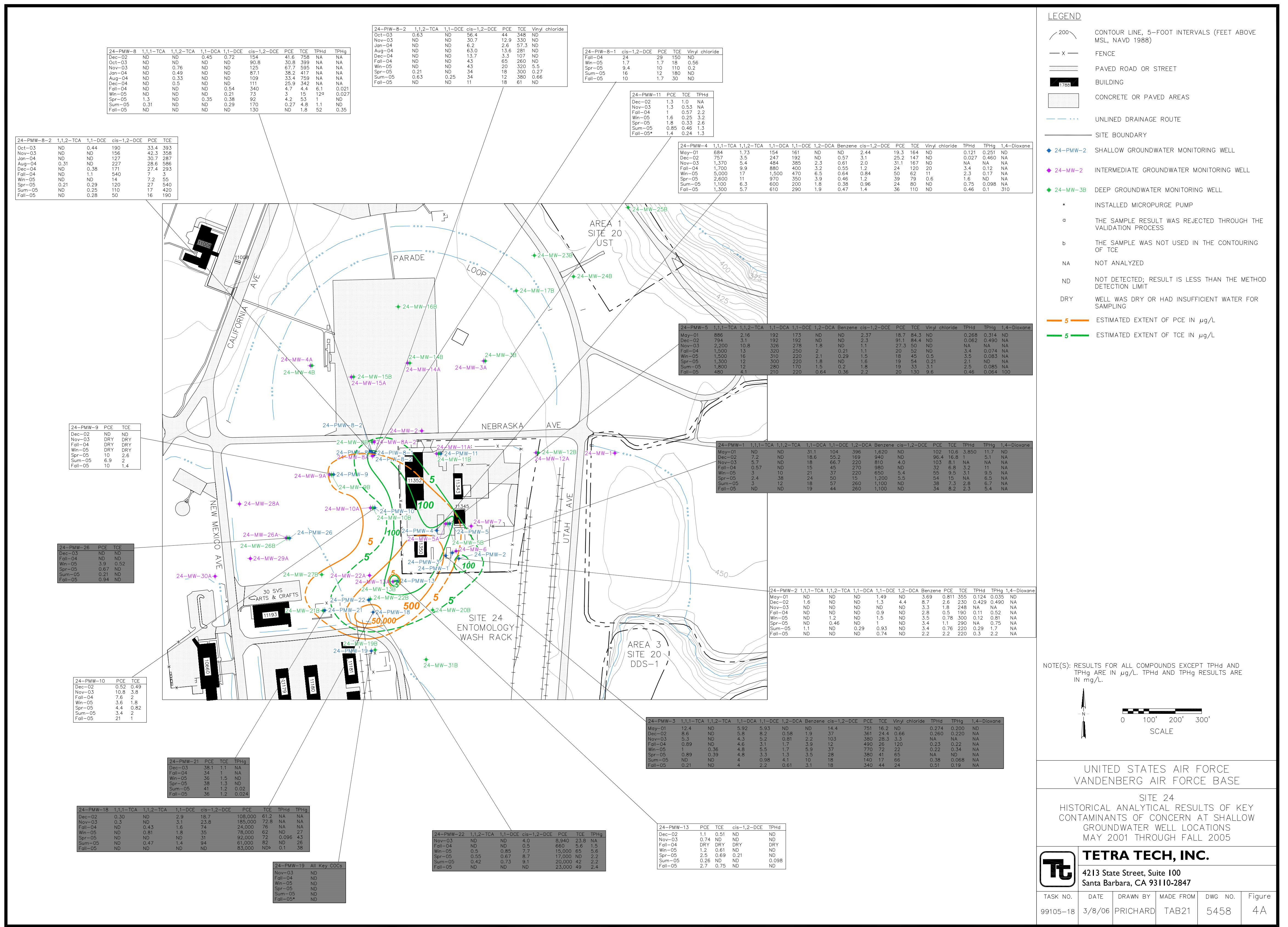


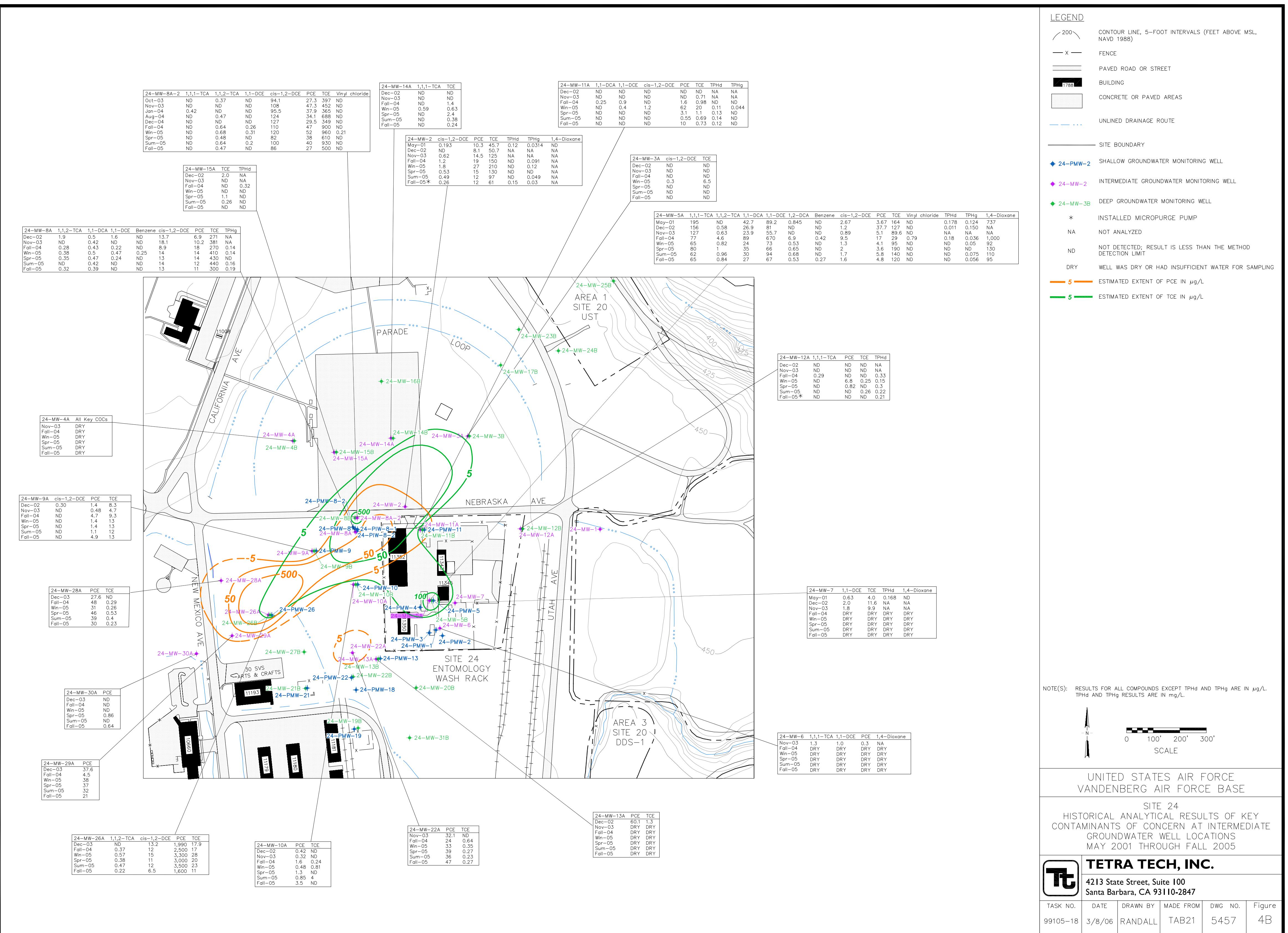


NOTE(S): RESULTS FOR ALL COMPOUNDS EXCEPT TPHg AND
 TPhd ARE IN $\mu\text{g}/\text{L}$. TPhg AND TPhd RESULTS ARE IN
 mg/L . METALS RESULTS ARE FOR FILTERED
 GROUNDWATER CONCENTRATIONS ABOVE BTWs.
 SUSPECTED LABORATORY CONTAMINANTS NOT SHOWN.
 RESULTS IN PARENTHESES ARE FROM DUPLICATE
 SAMPLES. B-QUALIFIED RESULTS NOT SHOWN.
 R-QUALIFIED RESULTS NOT SHOWN.









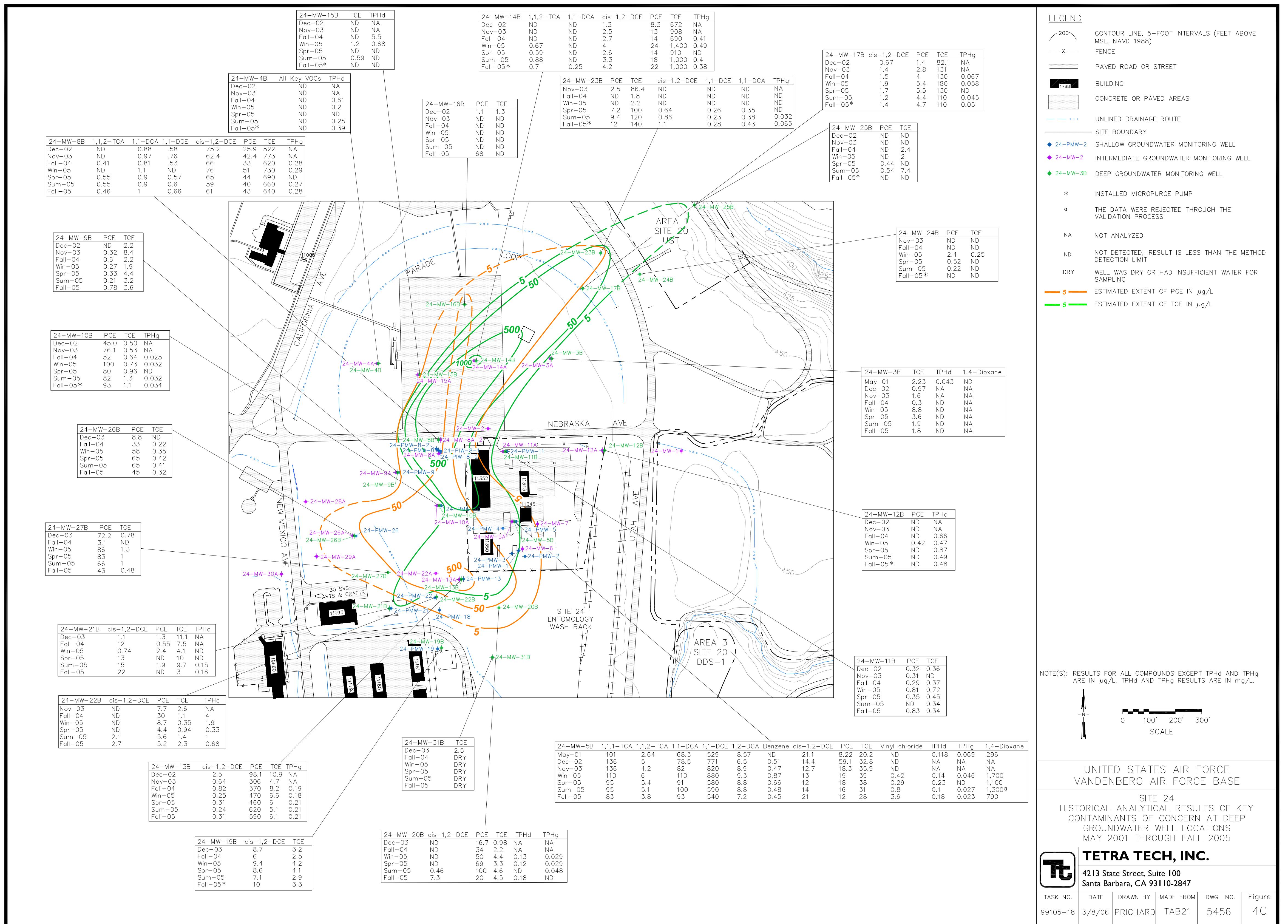


Table 1
Groundwater Elevations
Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Monitoring Well	Top of Casing Elevation (feet above msl)	Date Measured	Groundwater Depth (feet below TOC)	Groundwater Elevation (feet above msl)			
				Fall 2005	Fall 2005	Summer 2005	Spring 2005
Shallow Zone Wells							
24-PMW-1	459.69	04-Nov-05	9.82	449.87	450.15	450.11	449.87 ^a
24-PMW-2	459.18	04-Nov-05	8.16	451.02	451.82	451.72	450.25 ^a
24-PMW-3	459.75	04-Nov-05	10.02	449.73	450.14	450.04	449.60 ^a
24-PMW-4	458.43	04-Nov-05	6.70	451.73	452.73	453.15	452.23 ^a
24-PMW-5	458.28	04-Nov-05	6.99	451.29	451.86	452.25	452.01 ^a
24-PMW-8	459.42	04-Nov-05	11.03 ^c	448.39	448.94	449.65	447.51
24-PMW-8-2	459.45	04-Nov-05	11.33 ^c	448.12	448.90	449.56	446.69
24-PIW-8-1	459.43	05-Dec-05	11.68	447.75	449.07	449.83	447.87
24-PIW-8-2	459.11	05-Dec-05	11.04	448.07	449.16	449.68	448.08
24-PMW-9	459.86	04-Nov-05	15.50	444.36	447.02	446.94	DRY
24-PMW-10	458.87	04-Nov-05	9.20	449.67	451.23	453.30	453.31
24-PMW-11	458.04	04-Nov-05	7.31	450.73	451.23	451.70	451.67
24-PMW-13	459.83	04-Nov-05	7.57	452.26	453.03	454.01	452.41
24-PMW-18	459.31	04-Nov-05	11.59	447.72	448.90	449.50	448.60
24-PMW-19	460.27	04-Nov-05	6.95	453.32	454.54	455.66	454.94
24-PMW-21	460.70	04-Nov-05	9.56	451.14	452.50	447.42	449.97
24-PMW-22	459.29	04-Nov-05	14.19	445.10	445.90	444.18	444.88
24-PMW-26	460.72	04-Nov-05	10.36	450.36	450.38	449.41	448.22
Intermediate Zone Wells							
24-MW-2	459.57	04-Nov-05	35.27	424.30	424.16	423.84	423.70
24-MW-3A	458.15	04-Nov-05	37.24	420.91	421.03	420.54	420.39
24-MW-4A	460.40	04-Nov-05	DRY	DRY	DRY	DRY	DRY
24-MW-5A	457.99	04-Nov-05	38.21	419.78	419.80	419.78	419.73 ^a
24-MW-6 ^b	459.39	04-Nov-05	DRY	DRY	DRY	DRY	DRY ^a
24-MW-7	459.46	04-Nov-05	DRY	DRY	DRY	DRY	DRY ^a
24-MW-8A	459.23	04-Nov-05	29.96 ^c	429.27	429.57	429.28	428.54
24-MW-8A-2	459.23	04-Nov-05	31.22 ^c	428.01	428.18	427.89	426.54
24-MW-9A	459.99	04-Nov-05	21.00	438.99	440.44	437.88	437.79
24-MW-10A	459.01	04-Nov-05	27.33	431.68	432.31	431.66	431.89
24-MW-11A	457.98	04-Nov-05	28.60	429.38	433.12	428.12	428.81
24-MW-12A	457.43	04-Nov-05	18.58	438.85	439.83	437.85	436.32
24-MW-13A	459.70	04-Nov-05	DRY	DRY	DRY	DRY	DRY
24-MW-14A	458.42	04-Nov-05	37.38	421.04	421.17	421.19	421.34
24-MW-15A	459.21	04-Nov-05	36.66	422.55	422.46	422.28	422.47
24-MW-22A	459.50	04-Nov-05	21.68	437.82	437.96	437.15	437.35
24-MW-26A	460.42	04-Nov-05	10.74	449.68	449.92	449.24	448.01
24-MW-28A	461.23	04-Nov-05	10.83	450.40	450.60	450.31	448.72
24-MW-29A	460.89	04-Nov-05	10.67	450.22	450.69	450.20	448.77
24-MW-30A	459.59	04-Nov-05	8.61	450.98	451.40	451.29	449.57

Table 1
Groundwater Elevations
Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Monitoring Well	Top of Casing Elevation (feet above msl)	Date Measured	Groundwater Depth (feet below TOC)	Groundwater Elevation (feet above msl)			
				Fall 2005	Fall 2005	Summer 2005	Spring 2005
Deep Zone Wells							
24-MW-3B	458.07	04-Nov-05	37.90	420.17	420.33	419.96	419.69
24-MW-4B	460.40	04-Nov-05	65.65	394.75	394.72	394.63	394.47
24-MW-5B	458.35	04-Nov-05	65.11	393.24	393.24	393.15	393.03 ^a
24-MW-8B	459.24	04-Nov-05	33.58	425.66	425.75	425.41	424.99
24-MW-9B	459.95	04-Nov-05	19.77	440.18	439.81	438.95	438.16
24-MW-10B	458.88	04-Nov-05	23.87	435.01	434.95	434.39	433.85
24-MW-11B	457.86	04-Nov-05	34.31	423.55	423.35	423.03	423.01
24-MW-12B	457.33	04-Nov-05	20.22	437.11	437.87	437.07	434.52
24-MW-13B	459.70	04-Nov-05	64.61	395.09	395.02	394.87	394.68
24-MW-14B	458.36	04-Nov-05	38.00	420.36	420.40	420.08	419.98
24-MW-15B	459.19	04-Nov-05	37.26	421.93	422.09	421.69	421.51
24-MW-16B	458.48	07-Dec-05	37.81	420.67	419.69	419.27	419.09
24-MW-17B	456.11	04-Nov-05	38.34	417.77	417.96	417.62	417.36
24-MW-19B	460.12	04-Nov-05	66.51	393.61	393.62	393.57	393.52
24-MW-20B	459.55	04-Nov-05	65.35	394.20	394.15	394.07	394.19
24-MW-21B	460.22	04-Nov-05	66.72	393.50	393.57	393.49	393.46
24-MW-22B	459.33	04-Nov-05	67.70	391.63	393.62	393.51	393.41
24-MW-23B	455.09	04-Nov-05	37.85	417.24	417.48	417.13	416.89
24-MW-24B	452.59	04-Nov-05	34.52	418.07	417.31	417.00	417.77
24-MW-25B	427.58	04-Nov-05	23.80	403.78	403.88	404.60	403.76
24-MW-26B	460.61	04-Nov-05	11.75	448.86	449.04	448.34	447.19
24-MW-27B	460.46	04-Nov-05	11.76	448.70	448.96	448.35	447.15
24-MW-31B	459.60	04-Nov-05	65.80	393.80	393.79	393.71	DRY

Definition(s):

- msl - mean sea level
- TOC - top of casing

Note(s):

- a - TOC elevation converted from NGVD 1929 to NAVD 1988 during winter 2005.
- b - TOC surveyed prior to final well box construction. Data accurate to within 1 to 3 inches.
This well will require a re-survey for accuracy to 0.01 inch.
- c - Remediation activities by ARCADIS on 04 November 2005 may have affected water level measurements at these wells by ± 0 . feet. This margin of error does not affect the hydraulic gradients and directions illustrated on Figures 2A and 2B.

Table 2
Water Quality Parameters
Fall 2005
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

<i>Shallow Zone Sampling Location</i>		24-PMW-1	24-PMW-2	24-PMW-3	24-PMW-4	24-PMW-5	24-PMW-8	24-PMW-8-2	24-PMW-8-1
Sample ID	V24PMW1	V24PMW2	V24PMW3	V24PMW4	V24PMW5	V24PMW8	V24PMW82	V24PMW81	
Collection Date	08-Dec-05	08-Dec-05	08-Dec-05	01-Dec-05	01-Dec-05	05-Dec-05	05-Dec-05	05-Dec-05	05-Dec-05
Field Parameters¹:									
Temperature (° Celsius)	20.65	20.08	20.77	18.35	17.91	22.10	21.79	20.73	
Conductivity (µmhos/cm)	666	827	670	884	769	2,187	539	4,825	
pH	6.00	5.92	6.62	6.35	6.55	5.23	6.39	4.10	
Turbidity (NTUs)	7.14	22.7	7.11	2.75	12.1	26.9	42.6	>200	

<i>Shallow Zone Sampling Location</i>		24-PIW-8-2	24-PMW-9	24-PMW-10	24-PMW-11	24-PMW-13	24-PMW-18	24-PMW-19	24-PMW-21
Sample ID	V24PIW82	V24PMW9	V24PMW10	V24PMW11	V24PMW13	V24PMW18	V24PMW19	V24PMW21	
Collection Date	05-Dec-05	08-Dec-05	08-Dec-05	08-Dec-05	09-Nov-05	16-Nov-05	07-Dec-05	16-Nov-05	07-Dec-05
Field Parameters¹:									
Temperature (° Celsius)	20.53	19.77	19.34	22.05	21.75	19.75	19.67	18.98	
Conductivity (µmhos/cm)	5,310	430	708	1,003	309	746	1,366	1,116	
pH	3.61	6.87	6.91	6.37	6.46	7.23	6.95	6.90	
Turbidity (NTUs)	>200	>200	65.1	5.37	>200	71.3	14.0	26.5	

<i>Shallow Zone Sampling Location</i>		24-PMW-22	24-PMW-26						
Sample ID	V24PMW22	V24PMW26							
Collection Date	07-Dec-05	29-Nov-05							
Field Parameters¹:									
Temperature (° Celsius)	20.41	20.79							
Conductivity (µmhos/cm)	846	3,015							
pH	6.82	6.52							
Turbidity (NTUs)	15.3	40.1							

Table 2
Water Quality Parameters
Fall 2005
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

<i>Intermediate Zone Sampling Location</i>			24-MW-2	24-MW-3A	24-MW-5A	24-MW-8A	24-MW-8A-2	24-MW-9A	24-MW-10A	24-MW-11A
Sample ID	V24MW2	V24MW3A	V24MW5A	V24MW8A	V24MW8A2	V24MW9A	V24MW10A	V24MW11A	V24MW11A	
Collection Date	16-Nov-05	28-Nov-05	01-Dec-05	05-Dec-05	05-Dec-05	08-Dec-05	08-Dec-05	09-Dec-05	09-Dec-05	
Field Parameters¹:										
Temperature (° Celsius)	23.01	21.99	17.69	21.59	21.05	20.80	18.11	18.11	20.73	20.73
Conductivity (µmhos/cm)	1,031	1,495	789	846	808	695	1,156	1,156	1,078	1,078
pH	6.35	6.46	7.69	6.24	6.72	6.73	6.07	6.07	6.31	6.31
Turbidity (NTUs)	1.90	11.0	57.9	5.68	23.0	>200	81.1	81.1	4.25	4.25

<i>Intermediate Zone Sampling Location</i>			24-MW-12A	24-MW-14A	24-MW-15A	24-MW-22A	24-MW-26A	24-MW-28A	24-MW-29A	24-MW-30A
Sample ID	V24MW12A	V24MW14A	V24MW15A	V24MW22A	V24MW26A	V24MW28A	V24MW29A	V24MW30A	V24MW30A	
Collection Date	16-Nov-05	28-Nov-05	28-Nov-05	28-Nov-05	29-Nov-05	29-Nov-05	29-Nov-05	30-Nov-05	30-Nov-05	
Field Parameters¹:										
Temperature (° Celsius)	20.68	NM ²	19.86	19.16	19.75	20.17	20.38	20.38	20.00	20.00
Conductivity (µmhos/cm)	1,827	NM ²	1,314	1,075	1,776	2,737	1,643	1,643	2,158	2,158
pH	6.32	NM ²	6.90	6.07	5.94	6.41	5.95	5.95	5.93	5.93
Turbidity (NTUs)	6.09	NM ²	>200	93.3	3.43	>200	1.23	1.23	3.03	3.03

<i>Deep Zone Sampling Location</i>			24-MW-3B	24-MW-4B	24-MW-5B	24-MW-8B	24-MW-9B	24-MW-10B	24-MW-11B	24-MW-12B
Sample ID	V24MW3B	V24MW4BM	V24MW5B	V24MW8B	V24MW9B	V24MW10B	V24MW11B	V24MW12B	V24MW12B	
Collection Date	28-Nov-05	17-Nov-05	01-Dec-05	09-Dec-05	08-Dec-05	17-Nov-05	17-Nov-05	09-Dec-05	16-Nov-05	
Field Parameters¹:										
Temperature (° Celsius)	21.55	20.02	18.50	20.90	19.98	23.82	20.08	20.08	21.05	21.05
Conductivity (µmhos/cm)	1,150	2,187	856	744	1,068	1,528	1,047	1,047	1,455	1,455
pH	6.01	5.40	5.67	6.20	6.11	5.87	8.93	8.93	6.24	6.24
Turbidity (NTUs)	4.89	28.3	4.16	10.1	34.2	1.60	20.0	20.0	4.30	4.30

Table 2
Water Quality Parameters
Fall 2005
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

<i>Deep Zone Sampling Location</i>		24-MW-13B	24-MW-14B	24-MW-15B	24-MW-16B	24-MW-17B	24-MW-19B	24-MW-20B	24-MW-21B
Sample ID	V24MW13B	V24MW14B	V24MW15B	V24MW16B	V24MW17B	V24MW19B	V24MW20B	V24MW21B	
Collection Date	09-Dec-05	18-Nov-05	18-Nov-05	07-Dec-05	17-Nov-05	18-Nov-05	07-Dec-05	07-Dec-05	
Field Parameters¹:									
Temperature (° Celsius)	19.18	21.36	21.21	20.22	20.57	20.43	NM ²	NM ²	15.42
Conductivity (µmhos/cm)	719	1,587	2,472	1,046	1,296	1,670	NM ²	NM ²	1,083
pH	7.44	6.18	5.74	6.34	5.81	6.12	NM ²	NM ²	7.86
Turbidity (NTUs)	97.7	2.57	2.20	3.39	1.60	3.18	NM ²	NM ²	39.8

<i>Deep Zone Sampling Location</i>		24-MW-22B	24-MW-23B	24-MW-24B	24-MW-25B	24-MW-26B	24-MW-27B	
Sample ID	V24MW22B	V24MW23B	V24MW24B	V24MW25B	V24MW26B	V24MW27B		
Collection Date	07-Dec-05	17-Nov-05	17-Nov-05	17-Nov-05	30-Nov-05	30-Nov-05	07-Dec-05	
Field Parameters¹:								
Temperature (° Celsius)	18.04	19.10	19.26	17.38	20.46	19.55		
Conductivity (µmhos/cm)	1,193	914	2,316	1,592	1,293	1,356		
pH	5.95	6.02	5.87	5.69	5.76	6.64		
Turbidity (NTUs)	178	0.68	1.12	0.35	2.03	0.76		

Definition(s):

- µmhos/cm - micromhos per centimeter
- NM - not measured
- NTU - nephelometric turbidity unit

Note(s):

- 1 - Field parameters measured immediately prior to sampling. Field parameters for well 24-MW-9 and 24-MW-15A were measured at time of sampling because these wells were purged dry prior to the first reading.
- 2 - Water quality parameters were not measured due to insufficient water in the well.

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	Dissolved Metals	MDL ¹	PQL ¹	Primary MCL	BTV	Shallow Zone Wells	24-PMW-1 V24PMW1F 08-Dec-05	24-PMW-1 V99W600F (D) 08-Dec-05	24-PMW-2 V24PMW2F 08-Dec-05	24-PMW-3 V24PMW3F 08-Dec-05	24-PMW-4 V24PMW4F 01-Dec-05	
Aluminum	15	60	1,000	1,200		60 U g		63.5 J q		86.9 J q		60 U g		60 U g
Antimony ²	40	100	6	10		40 U g		40 U g		40 U g		40 U g		40 U g
Arsenic	4	10	10	7		89.7 g		87.7 g		11 g		5 U g		5 U g
Barium	1	5	1,000	276		7.77 g		7.24 g		15.9 g		10.2 g		16 g
Beryllium ²	1	5	4	0.3		1 U g		1 U g		1 U g		1 U g		1 U g
Cadmium	1	5	5	5		2 U g		2 U g		2 U g		2 U g		2 U g
Calcium	22	500	N/A	197,000		10,700 g		10,600 g		7,840 g		40,300 g		29,600 g
Chromium	1	10	50	20		5 U g		5 U g		5 U g		5 U g		5 U g
Cobalt	2	15	N/A	13		8.82 J q		5.55 J q		5.53 J q		5 U g		5 U g
Copper	1	10	1,300	58		5 U g		5 U g		5 U g		5 U g		5 U g
Iron	4	100	N/A	3,530		2,100 J c		1,840 J c		65.1 J c, q		110 J c		40 UJ c
Lead	2	3	15	3		4.37 g		3.76 g		2 U g		2 U g		2 U g
Magnesium	26	200	N/A	119,000		12,800 g		12,900 g		11,400 g		32,600 g		38,500 g
Manganese	1	5	N/A	971		152 g		149 g		33.3 g		198 g		3.94 J q
Mercury	0.09	0.3	2	0.2		0.1 U g		0.1 U g		0.1 U g		0.1 U g		0.1 U g
Molybdenum	2	15	N/A	12		10 U g		10 U g		10 U g		10 U g		10 U g
Nickel	5	20	100	490		14.8 J q		10 U g		14.6 J q		13.3 J q		10 U g
Potassium	41	1,000	N/A	13,300		2,340 g		1,740 g		2,040 g		2,590 g		1,320 g
Selenium ²	5	10	50	3		5.9 J q		5 U g		14.9 g		5 U g		9.84 J q
Silver ²	1	10	N/A	0.2		5 U g		5 U g		6.96 J q		6.6 J q		5 U g
Sodium	23	500	N/A	420,000		127,000 g		124,000 g		143,000 g		119,000 g		130,000 g
Thallium ²	5	10	2	1		5 U g		5 U g		5 U g		5 U g		5 U g
Vanadium	1	10	N/A	28		5 U g		5 U g		7.47 J q		12.4 g		5 U g
Zinc	2	20	N/A	80		13 J q		8.57 J q		6.62 J q		5 U g		11.2 J q

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID	Collection Date	Dissolved Metals	MDL ¹	PQL ¹	Primary MCL	BTV	Shallow Zone Wells V24PMW5F 01-Dec-05	24-PMW-5 V24PMW5F 05-Dec-05	24-PMW-8 V24PMW8F 05-Dec-05	24-PMW-10 V24PMW10F 08-Dec-05	24-PMW-10 V99W599F (D) 08-Dec-05	24-PMW-11F V24PMW11F 16-Nov-05	
Aluminum	15	60	1,000	1,200	60	U g	438	g	101 J q	108 J q	60 U g		
Antimony ²	40	100	6	10	40	U g	40	U g	40 U g	40 U g	40 U g		
Arsenic	4	10	10	7	5	U g	155	g	5 U g	5 U g	5 U g		
Barium	1	5	1,000	276	28.2	g	188	g	3.25 J q	2.82 J q	6.28 g		
Beryllium ²	1	5	4	0.3	1	U g	1	U g	2 U g	2 U g	1 U g		
Cadmium	1	5	5	5	2	U g	2	U g	2 U g	2 U g	2 U g		
Calcium	22	500	N/A	197,000	19,800	g	94,900	g	14,700	g	15,800	g	24,200 g
Chromium	1	10	50	20	5	U g	74.6	g	5 U g	5 U g	5 U g		
Cobalt	2	15	N/A	13	5	U g	24.3	g	5 U g	5 U g	5 U g		
Copper	1	10	1,300	58	5	U g	5	U g	5 U g	5 U g	5 U g		
Iron	4	100	N/A	3,530	40	U g	323,000	J c	52.5 J c, q	79 J c, q	40 U g		
Lead	2	3	15	3	2	U g	2	U g	2 U g	2 U g	2 U g		
Magnesium	26	200	N/A	119,000	27,400	g	104,000	g	16,300	g	16,300	g	29,400 g
Manganese	1	5	N/A	971	4.56	J q	914	g	11.1 g	11 g	11 g		
Mercury	0.09	0.3	2	0.2	0.1	U g	0.1	U g	0.1 U g	0.1 U g	0.1 U g		
Molybdenum	2	15	N/A	12	10	U g	10	U g	14.1 J q	11 J q	10 U g		
Nickel	5	20	100	490	10	U g	44.5	g	10 U g	10 U g	10 U g		
Potassium	41	1,000	N/A	13,300	845	J q	7,550	g	2,560	g	2,410	g	1,760 g
Selenium ²	5	10	50	3	10.5	g	5	U g	7.74 J q	6.47 J q	5.31 J q		
Silver ²	1	10	N/A	0.2	5	U g	5	U g	5 U g	5.23 J q	5 U g		
Sodium	23	500	N/A	420,000	120,000	g	196,000	g	128,000	g	136,000	g	134,000 g
Thallium ²	5	10	2	1	5	U g	5	U g	5 U g	5 U g	5 U g		
Vanadium	1	10	N/A	28	5	U g	182	g	5 U g	5 U g	5 U g		
Zinc	2	20	N/A	80	8.69	J q	63.1	g	14.4 J q	10.4 J q	5 U g		

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	Dissolved Metals	MDL ¹	PQL ¹	Primary MCL	BTW	Shallow Zone Wells		24-PMW-13 V24PMW13F 09-Dec-05		24-PMW-18 V24PMW18F 09-Dec-05		24-PMW-19 V24PMW19F 17-Nov-05		24-PMW-21 V24PMW21F 07-Dec-05	
						24-PMW-13 V24PMW13F 09-Dec-05	24-PMW-18 V24PMW18F 09-Dec-05	24-PMW-19 V24PMW19F 17-Nov-05	24-PMW-21 V24PMW21F 07-Dec-05						
Aluminum	15	60	1,000	1,200	3,590	g	3,430	g	1,280	g	833	g	60 U g		
Antimony ²	40	100	6	10	40	U g	40	U g	40	U g	40	U g	40 U g		
Arsenic	4	10	10	7	5.6	J q	6.54	J q	12.9	g	9.8	J q	7.02	J q	
Barium	1	5	1,000	276	9.85	g	10.1	g	7.57	g	2.86	J q	2.74	J q	
Beryllium ²	1	5	4	0.3	1	U g	1	U g	1	U g	1	U g	1 U g		
Cadmium	1	5	5	5	2	U g	2	U g	2	U g	2	U g	2 U g		
Calcium	22	500	N/A	197,000	2,390	g	2,520	g	7,850	g	9,910	g	14,800	g	
Chromium	1	10	50	20	5.14	J q	5.73	J q	5	U g	5	U g	5 U g		
Cobalt	2	15	N/A	13	7.04	J q	8.12	J q	5.47	J q	5	U g	6.22	J q	
Copper	1	10	1,300	58	5.22	J q	5	U g	5	U g	5	U g	5 U g		
Iron	4	100	N/A	3,530	2,860	J c	2,760	J c	1,130	J c	669	J c	40 U J c		
Lead	2	3	15	3	2	U g	2	U g	2	U g	2	U g	2 U g		
Magnesium	26	200	N/A	119,000	3,060	g	3,110	g	7,440	g	10,700	g	19,500	g	
Manganese	1	5	N/A	971	15.6	g	18	g	8.99	g	7.72	g	5.15	g	
Mercury	0.09	0.3	2	0.2	0.1	U g	0.1	U g	0.39	J q	0.1	U g	0.1 U g		
Molybdenum	2	15	N/A	12	10	U g	10	U g	10	U g	10	U g	10.2	J q	
Nickel	5	20	100	490	10	U g	10	U g	10	U g	10	U g	10 U g		
Potassium	41	1,000	N/A	13,300	1,750	g	2,020	g	3,610	g	1,950	g	3,850	g	
Selenium ²	5	10	50	3	5	U g	5.69	J q	5	U g	5	U g	5 U g		
Silver ²	1	10	N/A	0.2	5	U g	5	U g	5	U g	5	U g	5 U g		
Sodium	23	500	N/A	420,000	64,100	g	67,000	g	155,000	g	266,000	g	175,000	g	
Thallium ²	5	10	2	1	5	U g	5	U g	5	U g	5	U g	6.55	J q	
Vanadium	1	10	N/A	28	9.66	J q	11.1	g	18.5	g	13.2	g	5 U g		
Zinc	2	20	N/A	80	18.5	B J a, q	15.7	B J a, q	10.6	J q	8.7	J q	11.5	J q	

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW610B and SW74
IRP Site 24 (Entomology Wash
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	Dissolved Metals	MDL ¹	PQL ¹	Primary MCL	BTM	24-PMW-22 V24PMW22F 07-Dec-05	24-MW-2 V24MW2F 16-Nov-05	24-MW-3A V24MW3AF 18-Nov-05	24-MW-5A V24MW5AF 01-Dec-05	24-MW-8A V24MW8AF 05-Dec-05	
Sediment	Zone Wells	Intermediate Wells	Zone Wells	24-PMW-22 V24PMW22F 07-Dec-05	24-MW-2 V24MW2F 16-Nov-05	24-MW-3A V24MW3AF 18-Nov-05	24-MW-5A V24MW5AF 01-Dec-05	24-MW-8A V24MW8AF 05-Dec-05					
Aluminum	15	60	1,000	1,200	84.5	J q	60 U g	60 U g	60 U g	60 U g	60 U g	60 U g	60 U g
Antimony ²	40	100	6	10	40	U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g
Arsenic	4	10	10	7	9.58	J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g
Barium	1	5	1,000	276	2.44	J q	7.08 g	52 g	19 g	19 g	19 g	19 g	19 g
Beryllium ²	1	5	4	0.3			1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g
Cadmium	1	5	5	5			2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g
Calcium	22	500	N/A	197,000	12,400	g	12,200 g	26,900 g	32,500 g	32,500 g	32,500 g	32,500 g	32,500 g
Chromium	1	10	50	20	5	U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g
Cobalt	2	15	N/A	13	7.18	J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g
Copper	1	10	1,300	58	5	U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g
Iron	4	100	N/A	3,530	51.2	J c, q	40 U J c	40 U J c	40 U J c	40 U J c	40 U J c	40 U J c	40 U J c
Lead	2	3	15	3	2	U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g
Magnesium	26	200	N/A	119,000	11,300	g	18,100 g	39,800 g	23,000 g	23,000 g	23,000 g	23,000 g	23,000 g
Manganese	1	5	N/A	971	10.9	g	3 U g	6.69 g	6.42 g	6.42 g	6.42 g	6.42 g	6.42 g
Mercury	0.09	0.3	2	0.2	0.1	U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g
Molybdenum	2	15	N/A	12	10.2	J q	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g
Nickel	5	20	100	490	10	U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g
Potassium	41	1,000	N/A	13,300	7,280	g	830 U g	2,340 g	2,970 g	2,970 g	2,970 g	2,970 g	2,970 g
Selenium ²	5	10	50	3	5	U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g
Silver ²	1	10	N/A	0.2	5	U g	5.54 J q	11.1 g	6.76 J q	6.76 J q	6.76 J q	6.76 J q	6.76 J q
Sodium	23	500	N/A	420,000	194,000	g	197,000 g	283,000 g	175,000 g	175,000 g	175,000 g	175,000 g	175,000 g
Thallium ²	5	10	2	1	5	U g	5.31 J q	8.24 J q	6.12 J q	6.12 J q	6.12 J q	6.12 J q	6.12 J q
Vanadium	1	10	N/A	28	5	U g	5 U g	5.32 J q	5 U g	5 U g	5 U g	5 U g	5 U g
Zinc	2	20	N/A	80	13.2	J q	5 U g	11.4 J q	16.2 J q	16.2 J q	16.2 J q	16.2 J q	16.2 J q

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	Dissolved Metals	MDL ¹	PQL ¹	Primary MCL	BTW	Intermediate Wells		24-MW-10A V24MW10AF 08-Dec-05		24-MW-11A V24MW11AF 09-Dec-05		24-MW-12A V24MW12AF 16-Nov-05		24-MW-14A V24MW14AF 28-Nov-05		24-MW-15A V24MW15AF 28-Nov-05		
						Zone Wells	24-MW-10A V24MW10AF 08-Dec-05	Zone Wells	24-MW-11A V24MW11AF 09-Dec-05	Zone Wells	24-MW-12A V24MW12AF 16-Nov-05	Zone Wells	24-MW-14A V24MW14AF 28-Nov-05	Zone Wells	24-MW-15A V24MW15AF 28-Nov-05			
Aluminum	15	60	1,000	1,200		103 J q	86.2 J q	118 J q	60 U g	40 U g	40 U g	40 U g	60 U g	60 U g	60 U g	60 U g		
Antimony ²	40	100	6	10		40 U g	40 U g	5 U g	5 U g	7.43 J q	7.43 J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Arsenic	4	10	10	7		5 U g	5 U g	10.5 g	4.43 J q	4.43 J q	4.43 J q	6.62 g	6.62 g	6.58 g	6.58 g	6.58 g	6.58 g	
Barium	1	5	1,000	276		5.1 g	10.5 g	16,600 g	16,600 g	17,700 g	17,700 g	27,900 g						
Beryllium ²	1	5	4	0.3		1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	
Cadmium	1	5	5	5		2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	
Calcium	22	500	N/A	197,000		10,200 g	19,000 g	5 U g	5 U g	5.2 J q	5.2 J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Chromium	1	10	50	20		5 U g	5 U g	5 U g	5 U g	5.2 J q	5.2 J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Cobalt	2	15	N/A	13		5.4 J q	5.4 J q	5 U g	5 U g	7.83 J q	7.83 J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Copper	1	10	1,300	58		5 U g	5 U g	50.1 J c, q	50.1 J c, q	80 J c, q	80 J c, q	40 U C	40 U C					
Iron	4	100	N/A	3,530		66.2 J c, q	66.2 J c, q	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	
Lead	2	3	15	3		32.7 g	32.7 g	11.8 g	28,500 g	28,500 g	21,300 g	21,300 g	29,800 g	29,800 g	43,500 g	43,500 g	43,500 g	43,500 g
Magnesium	26	200	N/A	119,000		14,700 g	14,700 g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	
Manganese	1	5	N/A	971		0.2	0.2	10 U g	10 U g									
Mercury	0.09	0.3	2	15		N/A	12	10.1 J q	10.1 J q	10.1 J q	10.1 J q	10 U g	10 U g					
Molybdenum	2	15	N/A	490		100	100	2,950 g	2,950 g	1,620 g	1,620 g	3,220 g	3,220 g	4,770 g	4,770 g	4,770 g	4,770 g	
Nickel	5	20	100	410		N/A	13,300	11.14 g	11.14 g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Potassium	41	1,000	N/A	420,000		0.2	0.2	2,255,000 g	2,255,000 g	194,000 g	194,000 g	432,000 g	432,000 g	195,000 g	195,000 g	293,000 g	293,000 g	
Selenium ²	5	10	50	3		N/A	0.2	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Silver ²	1	10	N/A	80		N/A	420,000	11.14 g	11.14 g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Sodium	23	500	N/A	1		28	28	9.99 J q	9.99 J q	18.1 B J a, q	18.1 B J a, q	5 U g	5 U g	7.52 J q	7.52 J q	15 J q	15 J q	
Thallium ²	5	10	2	1		N/A	28	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Vanadium	1	10	N/A	80		N/A	80	9.99 J q	9.99 J q	18.1 B J a, q	18.1 B J a, q	5 U g	5 U g	7.52 J q	7.52 J q	15 J q	15 J q	
Zinc	2	20	N/A	80		N/A	80	N/A	N/A									

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg ARB, California

Dissolved Metals	MDL ¹	PQL ¹	Primary MCL	BTW	Zone Wells		24-MW-3B V99W592F (D)		24-MW-4B V24MW4BF		24-MW-5B V24MW5BF	
					Deep Zone	Deep Zone	24-MW-22A V24MW22AF	28-Nov-05	28-Nov-05	17-Nov-05	01-Dec-05	
Aluminum	15	60	1,000	1,200	83.8 J q	60 U g	60 U g	341 g	60 U g	40 U g	40 U g	
Antimony ²	40	100	6	10	40 U g	40 U g	4.02 J q	38.6 g	7.89 J q	7.89 J q	40.6 g	
Arsenic	4	10	10	7	745 J q	5.46 J q	22.3 g	24.1 g	77.5 g	77.5 g	77.5 g	
Barium	1	5	1,000	276	19.5 g	19.5 g	1 U g	1 U g	1 U g	1 U g	1 U g	
Beryllium ²	1	5	4	0.3	1 U g	4.02 J q	3.18 J q	2.17 J q	2.17 J q	2.17 J q	2 U g	
Cadmium	1	5	5	5	2 U g	15,200 g	15,200 g	48,600 g	48,600 g	48,600 g	22,900 g	
Calcium	22	500	N/A	197,000	14,900 g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Chromium	1	10	50	20	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Cobalt	2	15	N/A	13	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Copper	1	10	1,300	58	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Iron	4	100	N/A	3,530	50.5 J c, q	40 UJ C	40 UJ C	32,900 J C	32,900 J C	32,900 J C	40 UJ C	
Lead	2	3	15	3	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	
Magnesium	26	200	N/A	119,000	17,200 g	17,400 g	17,000 g	41,200 g	41,200 g	41,200 g	15,700 g	
Manganese	1	5	N/A	971	9.75 g	4.89 J q	8.1 g	328 g	328 g	328 g	82.9 g	
Mercury	0.09	0.3	2	0.2	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	
Molybdenum	2	15	N/A	12	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	
Nickel	5	20	100	490	51 g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	
Potassium	41	1,000	N/A	13,300	2,150 g	1,720 g	1,440 g	14,300 g	14,300 g	14,300 g	3,400 g	
Selenium ²	5	10	50	3	20.6 g	6.31 J q	8.83 J q	5 U g	5 U g	5 U g	5 U g	
Silver ²	1	10	N/A	0.2	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Sodium	23	500	N/A	420,000	211,000 g	179,000 g	174,000 g	409,000 g	409,000 g	409,000 g	154,000 g	
Thallium ²	5	10	2	1	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Vanadium	1	10	N/A	28	5.66 J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	
Zinc	2	20	N/A	80	11 J q	79.8 g	88.5 g	126 g	126 g	126 g	15.5 J q	

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	MDL ¹	PQL ¹	Primary MCL	BTM	24-MW-8B V24MW8BF 09-Dec-05	24-MW-8B V99W602F (D) 09-Dec-05	24-MW-10B V24MW10BF 17-Nov-05	24-MW-11B V24MW11BF 09-Dec-05	24-MW-12B V24MW12BF 16-Nov-05
			Deep Zone Wells	Deep Zone Wells	Deep Zone Wells	Deep Zone Wells	24-MW-8B V24MW8BF 09-Dec-05	24-MW-8B V99W602F (D) 09-Dec-05	24-MW-10B V24MW10BF 17-Nov-05	24-MW-11B V24MW11BF 09-Dec-05	24-MW-12B V24MW12BF 16-Nov-05
Aluminum	1.5	60	1,000	1,200	60	U g	60 J q	60 U g	61 J q	164 J q	
Antimony ²	40	100	6	10	40	U g	40 U g	40 U g	40 U g	40 U g	
Arsenic	4	10	10	7	5	U g	5 U g	5 U g	5 U g	5 U g	10.2 g
Barium	1	5	1,000	276	2.41	J q	2.92 J q	20 g	48.8 g	20.6 g	
Beryllium ²	1	5	4	0.3	1	U g	1 U g	1 U g	1 U g	1 U g	
Cadmium	1	5	5	5	2	U g	2 U g	2 U g	2 U g	2 U g	
Calcium	22	500	N/A	197,000	11,800	g	11,900 g	26,700 g	32,400 g	15,700 g	
Chromium	1	10	50	20	5	U g	5 U g	5 U g	5 U g	5 U g	
Cobalt	2	15	N/A	13	5	U g	6.41 J q	5 U g	5 U g	5 U g	
Copper	1	10	1,300	58	5	U g	5 U g	5 U g	5 U g	5 U g	
Iron	4	100	N/A	3,530	40	UJ c	40 UJ c	40 UJ c	50.3 J c, q	530 J c	
Lead	2	3	15	3	2	U g	2 U g	2 U g	2 U g	2 U g	
Magnesium	26	200	N/A	119,000	20,000	g	19,900 g	34,100 g	16,000 g	15,000 g	
Manganese	1	5	N/A	971	3	U g	8.33 g	3.46 J q	5.08 g	65.1 g	
Mercury	0.09	0.3	2	0.2	0.1	U g	0.1 U g	0.115 J q	0.1 U g	0.1 U g	
Molybdenum	2	15	N/A	12	10	U g	10 U g	10 U g	10 U g	10 U g	
Nickel	5	20	100	490	10	U g	16.3 J q	10 U g	13.9 J q	13.9 J q	
Potassium	41	1,000	N/A	13,300	1,400	g	1,340 g	4,540 g	6,330 g	2,130 g	
Selenium ²	5	10	50	3	5	U g	5 U g	19.1 g	5 U g	5 U g	
Silver ²	1	10	N/A	0.2	5	U g	5 U g	5 U g	5 U g	5 U g	
Sodium	23	500	N/A	420,000	135,000	g	135,000 g	246,000 g	175,000 g	348,000 g	
Thallium ²	5	10	2	1	5	U g	5 U g	5 U g	5 U g	5 U g	
Vanadium	1	10	N/A	28	5.26	J q	5.52 J q	5 U g	5.28 J q	5 U g	
Zinc	2	20	N/A	80	6.23	B J a, q	11.1 B J a, q	5 U g	6.4 B J a, q	5 U g	

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	MDL ¹	PQL ¹	Primary MCL	BTW	24-MW-13B V24MW13BF 09-Dec-05		24-MW-14B V24MW14BF 18-Nov-05		24-MW-15B V24MW15BF 18-Nov-05		24-MW-16B V24MW16BF 07-Dec-05		24-MW-17B V24MW17BF 17-Nov-05	
					Deep Zone Wells		24-MW-13B V24MW13BF 09-Dec-05		24-MW-14B V24MW14BF 18-Nov-05		24-MW-15B V24MW15BF 18-Nov-05		24-MW-16B V24MW16BF 07-Dec-05	
Dissolved Metals														
Aluminum	15	60	1,000	1,200		70.8 J q		60 U g						
Antimony ²	40	100	6	10		40 U g		40 U g		40 U g		40 U g		40 U g
Arsenic	4	10	10	7		7.88 J q		5 U g		7.92 J q		5 U g		5 U g
Barium	1	5	1,000	276		26 g		6.53 g		16.3 g		57.4 g		14.7 g
Beryllium ²	1	5	4	0.3		1 U g		1 U g		1 U g		1 U g		1 U g
Cadmium	1	5	5	5		2 U g		2 U g		4.25 J q		2 U g		2 U g
Calcium	22	500	N/A	197,000		15,400 g		24,000 g		32,900 g		20,000 g		19,300 g
Chromium	1	10	50	20		5 U g		5 U g		5 U g		5 U g		5 U g
Cobalt	2	15	N/A	13		5 U g		5 U g		5 U g		5 U g		5 U g
Copper	1	10	1,300	58		5 U g		5 U g		5 U g		5 U g		5 U g
Iron	4	100	N/A	3,530		62 J c, q		40 UJ c						
Lead	2	3	15	3		2 U g		2 U g		2 U g		2 U g		2 U g
Magnesium	26	200	N/A	119,000		8,030 g		37,700 g		65,700 g		17,400 g		25,400 g
Manganese	1	5	N/A	971		9.89 g		5.47 g		19.9 g		8.5 g		3 U g
Mercury	0.09	0.3	2	0.2		0.1 U g		0.1 U g		0.1 U g		0.1 U g		0.1 U g
Molybdenum	2	15	N/A	12		10 U g		10 U g		10 U g		10 U g		10 U g
Nickel	5	20	100	490		10.2 J q		10 U g		10.9 J q		10 U g		18.4 J q
Potassium	41	1,000	N/A	13,300		12,600 g		5,150 g		4,770 g		3,450 g		5,350 g
Selenium ²	5	10	50	3		5.08 J q		12.1 g		7.63 J q		7.53 J q		16.5 g
Silver ²	1	10	N/A	0.2		5 U g		5 U g		5 U g		5 U g		5 U g
Sodium	23	500	N/A	420,000		145,000 g		259,000 g		397,000 g		149,000 g		217,000 g
Thallium ²	5	10	2	1		5 U g		5 U g		5.59 J q		5 U g		5 U g
Vanadium	1	10	N/A	28		5 U g		5 U g		5 U g		5 U g		5 U g
Zinc	2	20	N/A	80		18.8 B J a, q		5 U g		42.7 g		11.8 J q		6.38 J q

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Dissolved Metals	Sample Location Sample ID	Collection Date	Primary		Deep Zone Wells	24-MW-19B V24MW19BF 18-Nov-05		24-MW-19B V99W568F (D) 18-Nov-05		24-MW-20B V24MW20BF 07-Dec-05		24-MW-21B V24MW21BF 07-Dec-05		24-MW-22B V24MW22BF 07-Dec-05	
			MDL ¹	PQL ¹		MCL	BTW	U g	U g	U g	U g	U g	U g	U g	U g
Aluminum	15	60	1,000	1,200		60	60	40	40	60	60	60	60	60	60
Antimony ²	40	100	6	10		5	10	7	119	117	8.43	6.2	8.48	40	40
Arsenic	4	10	10	7		19.3	19.9	19.9	11.5	11.5	63.3	6.2	8.48	1	1
Barium	1	5	1,000	276		119	119	117	117	8.43	63.3	63.3	63.3	39.4	39.4
Beryllium ²	1	5	4	0.3		1	1	1	1	1	1	1	1	1	1
Cadmium	1	5	5	5		5	2	2	2	2	2	2	2	2	2
Calcium	22	500	N/A	197,000		56,600	56,600	56,600	56,100	56,100	68,200	68,200	68,200	51,900	51,900
Chromium	1	10	50	20		5	5	5	5	5	5	5	5	5	5
Cobalt	2	15	N/A	13		5	5	5	5	5	5	5	5	5	5
Copper	1	10	1,300	58		5	5	5	5	5	5	5	5	5	5
Iron	4	100	N/A	3,530		15,900	15,900	15,900	15,800	15,800	1,770	1,770	1,770	13,500	13,500
Lead	2	3	15	3		2	2	2	2	2	2	2	2	2	2
Magnesium	26	200	N/A	119,000		52,100	52,100	50,700	45,500	45,500	28,700	28,700	28,700	37,700	37,700
Manganese	1	5	N/A	971		348	348	341	341	341	366	366	366	418	418
Mercury	0.09	0.3	2	0.2		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Molybdenum	2	15	N/A	12		10	10	10	10	10	10	10	10	10	10
Nickel	5	20	100	490		10	10	10	10	10	18	18	18	10	10
Potassium	41	1,000	N/A	13,300		9,040	9,040	10,300	13,400	13,400	10,900	10,900	10,900	11,100	11,100
Selenium ²	5	10	50	3		5	5	5	5	5	5	5	5	5	5
Silver ²	1	10	N/A	0.2		5	5	7.88	7.88	7.88	5	5	5	5	5
Sodium	23	500	N/A	420,000		246,000	246,000	243,000	229,000	229,000	206,000	206,000	206,000	185,000	185,000
Thallium ²	5	10	2	1		5	5	7.85	7.85	7.85	5	5	5	5	5
Vanadium	1	10	N/A	28		5	5	5	5	5	5	5	5	5	5
Zinc	2	20	N/A	80		15.5	15.5	14.8	14.8	14.8	15.4	15.4	15.4	18.2	18.2

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Dissolved Metals	MDL ¹	PQL ¹	Primary MCL	BTW	Deep Zone Wells		24-MW-22B V99W598F (D) 07-Dec-05		24-MW-23B V24MW23BF 17-Nov-05		24-MW-24B V24MW24BF 17-Nov-05		24-MW-24B V99W585F (D) 17-Nov-05		
					Collection Date	Well	Depth Zone	Well	Depth Zone	Well	Depth Zone	Well	Depth Zone	Well	Depth Zone
Aluminum	15	60	1,000	1,200				60	U g	60	U g	60	U g	60	U g
Antimony ²	40	100	6	10				40	U g	40	U g	40	U g	40	U g
Arsenic	4	10	10	7				7.04	J q	5	U g	5	U g	5	U g
Barium	1	5	1,000	276				37.8	g	4.79	J q	20.9	g	19.7	g
Beryllium ²	1	5	4	0.3				1	U g	1	U g	1	U g	1	U g
Cadmium	1	5	5	5				2	U g	2.43	J q	2	U g	2	U g
Calcium	22	500	N/A	197,000				50,500	g	12,900	g	40,300	g	38,900	g
Chromium	1	10	50	20				5	U g	5	U g	.5	U g	.5	U g
Cobalt	2	15	N/A	13				5	U g	5	U g	5	U g	5	U g
Copper	1	10	1,300	58				5	U g	5	U g	5	U g	5	U g
Iron	4	100	N/A	3,530				13.600	J c	40	UJ c	40	UJ c	40	UJ c
Lead	2	3	15	3				2	U g	2	U g	2	U g	2	U g
Magnesium	26	200	N/A	119,000				36,600	g	18,400	g	54,800	g	53,000	g
Manganese	1	5	N/A	971				417	g	8.6	g	8.73	g	7.57	g
Mercury	0.09	0.3	2	0.2				0.1	U g	0.1	U g	0.125	J q	0.165	J q
Molybdenum	2	1.5	N/A	12				10	U g	10	U g	10	U g	10	U g
Nickel	5	20	100	490				10	U g	10	U g	14.9	J q	14.3	J q
Potassium	41	1,000	N/A	13,300				11,100	g	3,280	g	4,580	g	4,280	g
Selenium ²	5	10	50	3				5	U g	5	U g	15.2	g	12.5	g
Silver ²	1	10	N/A	0.2				5	U g	5	U g	5	U g	5	U g
Sodium	23	500	N/A	420,000				183,000	g	177,000	g	233,000	g	413,000	g
Thallium ²	5	10	2	1				5.38	J q	5	U g	5	U g	5	U g
Vanadium	1	10	N/A	28				5	U g	7.03	J q	5	U g	5	U g
Zinc	2	20	N/A	80				28.2	g	5.67	J q	5.61	J q	5	U g

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	MDL ¹	PQL ¹	24-PMW-1 V24PMW1 08-Dec-05		24-PMW-1 V99W600(D) 08-Dec-05		24-PMW-2 V24PMW2 08-Dec-05		24-PMW-3 V24PMW3 08-Dec-05		24-PMW-4 V24PMW4 01-Dec-05	
			Shallow Zone	Wells	Shallow Zone	Wells	Shallow Zone	Wells	Shallow Zone	Wells	Shallow Zone	Wells
Total Metals												
Aluminum	15	60	4,800	J f	1,400	J f	8,250	g	350	g	4,490	g
Antimony	40	100	40	U g	40	U g	40	U g	40	U g	40	U g
Arsenic	4	10	73.3	g	64.5	g	20.9	g	5.15	J q	5	U g
Barium	1	5	23.2	J f	11.4	J f	51.8	g	12.3	g	33.3	g
Beryllium	1	5	1	U g	1	U g	1	U g	1	U g	1	U g
Cadmium	1	5	2	U g	2	U g	2	U g	2	U g	2	U g
Calcium	22	500	11,100	g	10,200	g	8,810	g	41,600	g	29,700	g
Chromium	1	10	5	U g	5	U g	16.3	g	5	U g	5.88	J q
Cobalt	2	15	5	U g	5	U g	14.4	J q	5	U g	5	U g
Copper	1	10	5	U g	5	U g	7.87	J q	5	U g	5	U g
Iron	4	100	7,120	J c, f	1,990	J c, f	13,000	J c	652	J c	3,790	J c
Lead	2	3	9.99	J f	5.16	J f	5.71	g	2	U g	2	U g
Magnesium	26	200	13,700	g	12,700	g	13,300	g	32,700	g	39,000	g
Manganese	1	5	155	g	127	g	98.2	g	246	g	74.9	g
Mercury	0.09	0.3	0.1	U g	0.1	U g	0.1	U g	0.1	U g	0.1	U g
Molybdenum	2	15	10	U g	10	U g	10	U g	10	U g	10	U g
Nickel	5	20	17.4	J q	12.2	J q	36	g	10	U g	10	U g
Potassium	41	1,000	2,190	g	2,720	g	4,000	g	2,300	g	1,400	g
Selenium	5	10	5.56	J q	5	U g	15.8	g	5	U g	11.9	g
Silver	1	10	5	U g	5	U g	7.22	J q	5	U g	5	U g
Sodium	23	500	123,000	g	119,000	g	142,000	g	122,000	g	130,000	g
Thallium	5	10	5	U g	5	U g	5	U g	5	U g	5	U g
Vanadium	1	10	12.7	g	8.01	J q	29.3	g	10.7	g	10.2	g
Zinc	2	20	17.8	J q	10.7	J q	21.8	g	5	U g	14.4	J q

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	MDL ¹	PQL ¹	Shallow Zone			Wells			24-PMW-5 V24PMW5 01-Dec-05			24-PMW-8 V24PMW8 05-Dec-05			24-PMW-10 V24PMW10 08-Dec-05			24-PMW-10 V99W599(D) 08-Dec-05			24-PMW-11 V24PMW11 16-Nov-05		
			Total Metals	24-PMW-5 V24PMW5 01-Dec-05	24-PMW-8 V24PMW8 05-Dec-05	24-PMW-10 V24PMW10 08-Dec-05	24-PMW-10 V99W599(D) 08-Dec-05	24-PMW-11 V24PMW11 16-Nov-05															
Aluminum	15	60	344	8	773	8	16,500	8	15,800	8	151	J q											
Antimony	40	100	40	U g	40	U g	40	U g	40	U g	40	U g											
Arsenic	4	10	5	U g	5	U g	219	g	12.3	g	9,12	J q											
Barium	1	5	32.9	g	220	g	59.9	g	58.6	g	6,41	g											
Beryllium	1	5	1	U g	1	U g	1	U g	1	U g	1	U g											
Cadmium	1	5	2	U g	2	U g	2	U g	2	U g	2	U g											
Calcium	22	500	19,800	g	99,200	g	13,600	g	13,900	g	22,400	g											
Chromium	1	10	5	U g	85.9	g	46.3	g	42.4	g	5	U g											
Cobalt	2	15	5	U g	20.9	g	16.1	g	9.09	J q	5	U g											
Copper	1	10	5	U g	250	g	15	g	13.7	g	5	U g											
Iron	4	100	247	J c	343,000	J c	16,800	J c	16,100	J c	165	J c											
Lead	2	3	2	U g	2	U g	10	g	8.58	g	2	U g											
Magnesium	26	200	27,600	g	107,000	g	17,000	g	17,500	g	27,000	g											
Manganese	1	5	29.3	g	952	g	396	g	402	g	4,94	J q											
Mercury	0.09	0.3	0.1	U g	0.158	J q	0.1	U g	0.1	U g	0.1	U g											
Molybdenum	2	15	10	U g	10	U g	12.4	J q	12.4	J q	10	U g											
Nickel	5	20	10	U g	64.8	g	26.2	g	26	g	10	U g											
Potassium	41	1,000	830	U g	8,760	g	4,380	g	4,160	g	2,680	g											
Selenium	5	10	10.1	g	5	U g	12.3	g	11.6	g	5	U g											
Silver	1	10	5	U g	5	U g	6.8	J q	5	U g	5.22	J q											
Sodium	23	500	120,000	g	202,000	g	141,000	g	145,000	g	121,000	g											
Thallium	5	10	5	U g	5	U g	5	U g	5	U g	5	U g											
Vanadium	1	10	5	U g	208	g	40.3	g	39.7	g	5	U g											
Zinc	2	20	7.88	J q	327	g	30.1	g	30.2	g	5	U g											

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	MDL ¹	PQL ¹	Shallow Zone Wells			24-PMW-13 V24PMW13 09-Dec-05			24-PMW-13 V99W601 (D) 09-Dec-05			24-PMW-18 V24PMW18 07-Dec-05			24-PMW-19 V24PMW19 17-Nov-05			24-PMW-21 V24PMW21 07-Dec-05		
			24-PMW-13 V24PMW13 09-Dec-05	24-PMW-13 V99W601 (D) 09-Dec-05	24-PMW-18 V24PMW18 07-Dec-05	24-PMW-18 V24PMW18 07-Dec-05	24-PMW-19 V24PMW19 17-Nov-05	24-PMW-19 V24PMW19 17-Nov-05	24-PMW-21 V24PMW21 07-Dec-05	24-PMW-21 V24PMW21 07-Dec-05	24-PMW-21 V24PMW21 07-Dec-05									
Total Metals																				
Aluminum	15	60	50,600 J f	137,000 J f	14,600 g	2,550 g	3,160 g													
Antimony	40	100	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g	40 U g			
Arsenic	4	10	28.9 J f	61.4 J f	14.4 g	8.74 J q	5.95 J q	5.95 J q	5.95 J q	5.95 J q	5.95 J q	5.95 J q	5.95 J q	5.95 J q	5.95 J q	5.95 J q	5.95 J q			
Barium	1	5	134 J f	324 J f	51.8 g	5.99 g	15.8 g	15.8 g	15.8 g	15.8 g	15.8 g	15.8 g	15.8 g	15.8 g	15.8 g	15.8 g	15.8 g			
Beryllium	1	5	1.35 J q	3.51 J q	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g			
Cadmium	1	5	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g			
Calcium	22	500	5,950 J f	12,900 J f	13,200 g	10,500 g	15,500 g	15,500 g	15,500 g	15,500 g	15,500 g	15,500 g	15,500 g	15,500 g	15,500 g	15,500 g	15,500 g			
Chromium	1	10	94.3 J f	242 J f	24.9 g	5 U g	6.8 J q	6.8 J q	6.8 J q	6.8 J q	6.8 J q	6.8 J q	6.8 J q	6.8 J q	6.8 J q	6.8 J q	6.8 J q			
Cobalt	2	15	7.09 J q	22.6 g	7.27 J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g			
Copper	1	10	34.8 J f	83 J f	18.3 g	5.36 J q	5.36 J q	5.36 J q	5.36 J q	5.36 J q	5.36 J q	5.36 J q	5.36 J q	5.36 J q	5.36 J q	5.36 J q	5.36 J q			
Iron	4	100	55,300 J c, f	144,000 J c, f	13,000 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c	1,930 J c			
Lead	2	3	15.5 J f	40.7 J f	7.45 g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g			
Magnesium	26	200	9,640 J f	21,400 J f	9,840 g	11,500 g	20,400 g	20,400 g	20,400 g	20,400 g	20,400 g	20,400 g	20,400 g	20,400 g	20,400 g	20,400 g	20,400 g			
Manganese	1	5	127 J f	328 J f	106 g	6.6 g	46.7 g	46.7 g	46.7 g	46.7 g	46.7 g	46.7 g	46.7 g	46.7 g	46.7 g	46.7 g	46.7 g			
Mercury	0.09	0.3	0.1 U g	0.1 U g	0.454 J q	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g			
Molybdenum	2	15	10 U g	10 U g	11.4 J q	11.1 J q	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g			
Nickel	5	20	52.1 J f	138 J f	23.5 g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g			
Potassium	41	1,000	6,870 J f	16,100 J f	5,950 g	2,180 g	3,760 g	3,760 g	3,760 g	3,760 g	3,760 g	3,760 g	3,760 g	3,760 g	3,760 g	3,760 g	3,760 g			
Selenium	5	10	5 U g	5 U g	5.53 J q	5.07 J q	8.33 J q	8.33 J q	8.33 J q	8.33 J q	8.33 J q	8.33 J q	8.33 J q	8.33 J q	8.33 J q	8.33 J q	8.33 J q			
Silver	1	10	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g			
Sodium	23	500	70,100 g	73,900 g	154,000 g	281,000 g	178,000 g	178,000 g	178,000 g	178,000 g	178,000 g	178,000 g	178,000 g	178,000 g	178,000 g	178,000 g	178,000 g			
Thallium	5	10	99.5 J f	250 J f	40.4 g	15.3 g	7.59 J q	7.59 J q	7.59 J q	7.59 J q	7.59 J q	7.59 J q	7.59 J q	7.59 J q	7.59 J q	7.59 J q	7.59 J q			
Vanadium	1	10	164 J f	164 J f	50.7 g	16 J q	8.31 J q	8.31 J q	8.31 J q	8.31 J q	8.31 J q	8.31 J q	8.31 J q	8.31 J q	8.31 J q	8.31 J q	8.31 J q			
Zinc	2	20	73.3 J f	73.3 J f																

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Total Metals	MDL ¹	PQL ¹	Shallow Zone Wells		Intermediate Wells		Deep Zone Wells		24-PMW-22 V24PMW22 07-Dec-05		24-MW-2 V24MW2 16-Nov-05		24-MW-3A V24MW3A 18-Nov-05		24-MW-8A V24MW8A 05-Dec-05		24-MW-10A V24MW10A 08-Dec-05	
Sample Location	Sample ID	Collection Date	24-PMW-22 V24PMW22 07-Dec-05	24-MW-2 V24MW2 16-Nov-05	24-MW-3A V24MW3A 18-Nov-05	24-MW-8A V24MW8A 05-Dec-05	24-MW-10A V24MW10A 08-Dec-05	24-PMW-22 V24PMW22 07-Dec-05	24-MW-2 V24MW2 16-Nov-05	24-MW-3A V24MW3A 18-Nov-05	24-MW-8A V24MW8A 05-Dec-05	24-MW-10A V24MW10A 08-Dec-05						
Aluminum	15	60	5,140	8	60 U g	123 J q	2,630	8	6,250	8	40 U g	40 U g	40 U g	40 U g	6,250	8		
Antimony	40	100	40 U g	5.59 J q	5 U g	40 U g	5.08 J q	5 U g	6.27 J q	5 U g	1 U g	1 U g	1 U g	6.27 J q	5 U g	33.4 g		
Arsenic	4	10	24.5	g	7.21	g	57.7	g	23.4	g	2 U g	2 U g	2 U g	2 U g	23.4 g	g		
Barium	1	5	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g	1 U g		
Beryllium	1	5	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g	2 U g		
Cadmium	1	5	13,900	g	12,300	g	26,600	g	12,300	g	12,300	g	10,900	g	10,900	g		
Calcium	22	500	5.77 J q	5 U g	5 U g	5 U g	5 U g	5 U g	9.98 J q	9.98 J q	5 U g	5 U g	5 U g	5 U g	15.2 g	g		
Chromium	1	10	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g		
Cobalt	2	15	8.42 J q	5 U g	5 U g	5 U g	5 U g	5 U g	8.42 J q	8.42 J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g		
Copper	1	10	4,570	J c	40 U J c	162 J c	2,730	J c	4,570	J c	162 J c	2,730 J c	2,730 J c	2,730 J c	2,730 J c	2,730 J c		
Iron	4	100	3.95	g	2 U g	2 U g	2 U g	2 U g	3.95	g	38,800	g	18,700	g	18,700	g		
Lead	2	3	13,000	g	18,200	g	18,200	g	13,000	g	13,000	g	15,600	g	15,600	g		
Magnesium	26	200	118	g	3 U g	7.1	7.1	g	118	g	3 U g	7.1	56.6	g	56.6	g		
Manganese	1	5	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.1 U g		
Mercury	0.09	0.3	12.7 J q	10 U g	10 U g	10 U g	10 U g	10 U g	12.7 J q	10.7 J q	10 U g	10 U g	10 U g	10 U g	10 U g	10 U g		
Molybdenum	2	15	8,720	g	1,390	g	2,670	g	8,720	g	1,390	g	4,410	g	4,410	g		
Nickel	5	20	5.01 J q	6.18 J q	6.18 J q	10.6 g	5 U g	5 U g	5.01 J q	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g		
Potassium	41	1,000	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g		
Selenium	5	10	203,000	g	197,000	g	275,000	g	203,000	g	197,000	g	147,000	g	147,000	g		
Silver	1	10	5.15 J q	12.1 g	5 U g	6.05 J q	5 U g	5 U g	5.15 J q	16.1 J q	5 U g	5.67 J q	5 U g	5 U g	5 U g	5 U g		
Sodium	23	500	12.1 g	5 U g	5 U g	5 U g	5 U g	5 U g	12.1 g	16.1 J q	5 U g	5 U g	5 U g	5 U g	14.3 g	g		
Thallium	5	10	16.1 J q	5 U g	5 U g	5 U g	5 U g	5 U g	16.1 J q	16.1 J q	5 U g	5 U g	5 U g	5 U g	8.35 J q	g		
Vanadium	1	10	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g		
Zinc	2	20	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g	5 U g		

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	MDL ¹	PQL ¹	Intermediate Zone Wells		24-MW-11A V24MW11A 09-Dec-05		24-MW-12A V24MW12A 16-Nov-05		24-MW-22A V24MW22A 29-Nov-05		Deep Zone Wells		24-MW-3B V24MW3B 28-Nov-05		24-MW-3B V99W592 (D) 28-Nov-05	
			Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
Aluminum	15	60			7,640	8	420	8	7,080	8			60	U g	60	U g
Antimony	40	100			40	U g	40	U g	40	U g			40	U g	40	U g
Arsenic	4	10			5	U g	7.72	J q	9	J q	5	U g	5	U g	5	U g
Barium	1	5			47.3	g	5.56	g	40.9	g	21.3	g	25.1	g	25.1	g
Beryllium	1	5			1	U g	1	U g	1	U g	1	U g	1	U g	1	U g
Cadmium	1	5			2	U g	2	U g	2	U g	2	U g	3.57	J q	4.37	J q
Calcium	22	500			19,100	g	16,300	g	15,200	g	15,100	g	15,300	g	15,300	g
Chromium	1	10			19.3	g	5	U g	5	U g	5	U g	5	U g	5	U g
Cobalt	2	15			5	U g	5	U g	5	U g	5	U g	5	U g	5	U g
Copper	1	10			6.97	J q	7.88	J q	5	U g	5	U g	5	U g	5	U g
Iron	4	100			6,290	J c	275	J c	3,590	J c	100	J c	100	J c	131	J c
Lead	2	3			3.38	g	2	U g	2	U g	2	U g	2	U g	2	U g
Magnesium	26	200			30,200	g	21,000	g	17,900	g	18,100	g	17,000	g	17,000	g
Manganese	1	5			79.6	g	4.97	J q	27.5	g	10.8	g	13.3	g	13.3	g
Mercury	0.09	0.3			0.1	U g	0.1	U g	0.11	J q	0.541	g	0.1	U g	0.1	U g
Molybdenum	2	15			10	U g	10.6	J q	10	U g	10	U g	10	U g	10	U g
Nickel	5	20			17.9	J q	12.5	J q	14.9	J q	10	U g	10	U g	10	U g
Potassium	41	1,000			3,500	g	3,430	g	3,420	g	2,220	g	2,190	g	2,190	g
Selenium	5	10			5	U g	5	U g	20.1	g	7.29	J q	8.74	J q	8.74	J q
Silver	1	10			5	U g	5	U g	5	U g	5	U g	5	U g	5	U g
Sodium	23	500			198,000	g	420,000	g	212,000	g	186,000	g	171,000	g	171,000	g
Thallium	5	10			5	U g	5	U g	5	U g	5	U g	5	U g	5	U g
Vanadium	1	10			16.6	g	5	U g	16.7	g	5	U g	5	U g	5	U g
Zinc	2	20			33.6	a	33.6	a	20.3	a	69	a	91.6	a	91.6	a

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A ($\mu\text{g/L}$)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	MDL ¹	PQL ¹	Deep Zone Wells	24-MW-4B V24MW4BM 17-Nov-05	24-MW-5B V24MW5B 01-Dec-05	24-MW-8B V99W602 (D) 09-Dec-05	24-MW-8B V99W602 (D) 09-Dec-05	24-MW-10B V24MW10B 17-Nov-05
Total Metals										
Aluminum	15	60	480	85.4 J q		1,700 J f		886 J f		381 g
Antimony	40	100	40 U g	40 U g		40 U g		40 U g		40 U g
Arsenic	4	10	39.4 g	7.27 J q		5 U g		5 U g		5 U g
Barium	1	5	83.2 g	37.8 g		9.81 J f		7.13 J f		23.3 g
Beryllium	1	5	1 U g	1 U g		1 U g		1 U g		1 U g
Cadmium	1	5	2 U g	2.05 J q		2 U g		2 U g		2 U g
Calcium	22	500	47,100 g	21,600 g		11,600 g		11,600 g		26,600 g
Chromium	1	10	5 U g	5 U g		5 U g		5 U g		5 U g
Cobalt	2	15	9.15 J q	5 U g		5 U g		5 U g		5 U g
Copper	1	10	5 U g	8.22 J q		5 U g		5 U g		5 U g
Iron	4	100	32,600 J c	62.1 J c, q		955 J c, f		581 J c, f		373 J c
Lead	2	3	2 U g	2 U g		2 U g		2 U g		2 U g
Magnesium	26	200	40,400 g	15,200 g		19,700 g		19,500 g		34,000 g
Manganese	1	5	315 g	98.9 g		12.4 g		9.75 g		3 U g
Mercury	0.09	0.3	0.1 U g	0.1 U g		0.1 U g		0.1 U g		0.272 J q
Molybdenum	2	15	10 U g	10 U g		10 U g		10 U g		10 U g
Nickel	5	20	70 g	16.9 J q		10 U g		10 U g		40.4 g
Potassium	41	1,000	12,200 g	3,540 g		1,580 g		1,760 g		4,090 g
Selenium	5	10	5 U g	19.5 g		5 U g		5 U g		19.2 g
Silver	1	10	5 U g	5 U g		5 U g		5 U g		5 U g
Sodium	23	500	388,000 g	148,000 g		137,000 g		133,000 g		249,000 g
Thallium	5	10	5 U g	5 U g		5 U g		5 U g		5 U g
Vanadium	1	10	5 U g	8.24 J q		7.53 J q		7.53 J q		5 U g
Zinc	2	20	124 g	7.65 J q	9.88 a, q	7.45 a, q		7.45 a, q		7.9 J q

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	MDL ¹	PQL ¹	24-MW-11B V24MW11B 09-Dec-05		24-MW-12B V24MW12B 16-Nov-05		24-MW-13B V24MW13B 09-Dec-05		24-MW-14B V24MW14B 18-Nov-05		24-MW-15B V24MW15B 18-Nov-05	
			Deep Zone Wells	Shallow Wells								
Total Metals												
Aluminum	15	60	2,610	g	412	g	8,270	g	60	U g	60	U g
Antimony	40	100	40	U g								
Arsenic	4	10	6.12	J q	7.21	J q	12.1	g	6.65	J q	6.68	J q
Barium	1	5	74.2	g	21.2	g	158	g	6.28	g	16.9	g
Beryllium	1	5	1	U g	1	U g	1	U g	1	U g	1	U g
Cadmium	1	5	2	U g	2	U g	2	U g	2	U g	3.98	J q
Calcium	22	500	31,900	g	15,500	g	20,800	g	24,100	g	34,200	g
Chromium	1	10	7.53	J q	5	U g	46.7	g	5	U g	5	U g
Cobalt	2	15	5	U g	5	U g	5	U g	5	U g	5	U g
Copper	1	10	6.34	J q	28.7	g	18.3	g	5	U g	5	U g
Iron	4	100	2,470	J c	654	J c	15,100	J c	40	U J c	55.9	J c, q
Lead	2	3	2	U g	2	U g	7.03	g	2	U g	2	U g
Magnesium	26	200	15,700	g	14,800	g	10,000	g	37,800	g	69,200	g
Manganese	1	5	15.9	g	63.6	g	85.5	g	4.21	J q	17.8	g
Mercury	0.09	0.3	0.1	U g								
Molybdenum	2	15	10	U g								
Nickel	5	20	12.7	J q	32.2	g	38.7	g	10	U g	17.5	J q
Potassium	41	1,000	5,520	g	2,450	g	15,100	g	6,010	g	3,710	g
Selenium	5	10	5	U g	5.28	J q	8.22	J q	11.5	g	9.78	J q
Silver	1	10	5	U g	5	U g	5.47	J q	5	U g	5.19	J q
Sodium	23	500	167,000	g	342,000	g	148,000	g	260,000	g	417,000	g
Thallium	5	10	5	U g	5	U g	5	U g	5	U g	6.57	J q
Vanadium	1	10	11.5	g	5	U g	29.7	g	5	U g	5	U g
Zinc	2	20	12.3	a, q	5	U g	49.9	g	5	U g	43	g

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location Sample ID Collection Date	MDL ¹	PQL ¹	Deep Zone Wells	24-MW-16B V24MW16B 07-Dec-05	24-MW-17B V24MW17B 17-Nov-05	24-MW-19B V24MW19B 18-Nov-05	24-MW-19B V99W568 (D) 18-Nov-05	24-MW-21B V24MW21B 07-Dec-05
Total Metals								
Aluminum	15	60		143 J q	60 U g	60 U g	60 U g	5,390 g
Antimony	40	100		40 U g	40 U g	40 U g	40 U g	40 U g
Arsenic	4	10		5 U g	5 U g	18.5 g	18.7 g	12 g
Barium	1	5		65.9 g	14.7 g	133 g	117 g	295 g
Beryllium	1	5		1 U g	1 U g	1 U g	1 U g	1 U g
Cadmium	1	5		2 U g	2 U g	2 U g	2 U g	2 U g
Calcium	22	500		21,000 g	19,100 g	56,200 g	55,800 g	167,000 g
Chromium	1	10		5 U g	5 U g	5 U g	5 U g	28.8 g
Cobalt	2	15		5 U g	5 U g	5 U g	5 U g	9.58 J q
Copper	1	10		5 U g	5 U g	5 U g	5 U g	51.7 g
Iron	4	100		151 J c	40 UJc	16,000 J c	15,800 J c	19,200 J c
Lead	2	3		2 U g	2 U g	2 U g	2 U g	2 U g
Magnesium	26	200		16,900 g	25,200 g	51,300 g	51,200 g	34,300 g
Manganese	1	5		9.97 g	3 U g	345 g	340 g	546 g
Mercury	0.09	0.3		0.1 U g	0.1 U g	0.1 U g	0.1 U g	0.132 J q
Molybdenum	2	15		10 U g	10 U g	10 U g	10 U g	10 U g
Nickel	5	20		10 U g	10 U g	10 U g	10 U g	30.7 g
Potassium	41	1,000		3,020 g	4,720 g	10,400 g	9,460 g	11,100 g
Selenium	5	10		6.74 J q	16.1 g	5 U g	5 U g	5 U g
Silver	1	10		5 U g	5 U g	5 U g	5 U g	5 U g
Sodium	23	500		144,000 g	215,000 g	242,000 g	241,000 g	206,000 g
Thallium	5	10		5 U g	5 U g	6.81 J q	6.99 J q	5.76 J q
Vanadium	1	10		5 U g	5 U g	5 U g	5 U g	15.3 g
Zinc	2	20		14.2 J q	7.14 J q	17.4 J q	22.4 g	13.7 g

Table 3
Metals in Groundwater
Fall 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	MDL ¹	PQL ¹	Deep Zone Wells	24-MW-22B V24MW22B 07-Dec-05	24-MW-22B V99W598 (D) 07-Dec-05	24-MW-23B V24MW23B 17-Nov-05	24-MW-24B V24MW24B 17-Nov-05	24-MW-24B V99W585 (D) 17-Nov-05
Total Metals										
Aluminum	15	60	18,100	J f	3,300	J f	60	U g	60	U g
Antimony	40	100	40	U g	40	U g	40	U g	40	U g
Arsenic	4	10	21.8	g	9.48	J q	5	U g	5	U g
Barium	1	5	297	J f	89	J f	4.8	J q	19.8	g
Beryllium	1	5	1.09	J q	1	U g	1	U g	1	U g
Cadmium	1	5	3.05	J q	2	U g	2.9	J q	2	U g
Calcium	22	500	59,500	g	49,400	g	12,800	g	38,900	g
Chromium	1	10	121	J f	19.9	J f	5	U g	5	U g
Cobalt	2	15	15.4	g	6.48	J q	5	U g	5	U g
Copper	1	10	36.9	J f	10.6	J f	5	U g	5	U g
Iron	4	100	57,400	J c,f	20,300	J c,f	40	U J c	45.1	J c,q
Lead	2	3	16.1	g	2.39	J q	2	U g	2	U g
Magnesium	26	200	41,900	g	35,200	g	18,500	g	52,700	g
Manganese	1	5	666	J f	429	J f	4.24	J q	8.48	g
Mercury	0.09	0.3	0.1	U g	0.1	U g	0.1	U g	0.166	J q
Molybdenum	2	15	10	U g	10.1	J q	10	U g	10	U g
Nickel	5	20	133	g	19.9	J q	10	U g	13.6	J q
Potassium	41	1,000	13,200	g	12,400	g	3,270	g	4,390	g
Selenium	5	10	6.68	J q	5	U g	10	g	14.7	g
Silver	1	10	5	U g	5	U g	5	U g	5	U g
Sodium	23	500	177,000	g	174,000	g	178,000	g	411,000	g
Thallium	5	10	5	U g	5	U g	5	U g	5	U g
Vanadium	1	10	85.6	J f	18.5	J f	5.77	J q	5.36	J q
Zinc	2	20	196	J f	57.3	J f	18.9	J q	9.17	J q

Table 3
Metals in Groundwater
Summer 2005
EPA Methods SW6010B and SW7470A (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Data Validity Qualifier(s):	B	- The sample result is less than 5 times (10 times for common organic laboratory contaminants) the blank contamination. The result is considered not to have originated from the environmental sample, because cross-contamination is suspected.
J	-	The analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value.
U	-	The analyte was not detected at or above the MDL.
UJ	-	The analyte was not detected above the MDL; however, the MDL is uncertain and may be elevated above normal levels.
Data Validity Comment(s):	a	- The analyte was found in the method blank.
	c	- The matrix spike and/or matrix spike duplicate recoveries were outside control limits.
	f	- The duplicate/replicate sample's relative percent difference was outside the control limit.
	g	- The data met prescribed criteria as detailed in the QAPP.
	q	- The analyte detection was below the PQL.
Definition(s):	BTV	- background threshold value
	(D)	- duplicate sample
	MCL	- maximum contaminant level
	MDL	- method detection limit
	µg/L	- micrograms per liter
	N/A	- not applicable
	PQL	- practical quantitation limit
	QAPP	- Quality Assurance Project Plan
Note(s):	Bold type indicates results that were above the MCL.	
	Shading indicates results that were above the 95th percentile BTV.	
1	- Values from QAPP Addendum (Tetra Tech 2004).	
2	- The BTV was less than the method detection limit for this metal.	

Table 4
TPH, Ethanol, and Methanol in Groundwater
Fall 2005
EPA Method SW8015B (mg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	TPH as Gasoline	TPH as Diesel	Ethanol	Methanol
			MDL ^a	0.02	0.19	0.25
			PQL ^a	0.1	1.0	0.5
Shallow Zone Wells						
24-PMW-1	V24PMW1	08-Dec-05	5.1 g	2.2 g	0.5 U g	0.5 U g
24-PMW-1	V99W600 (D)	08-Dec-05	5.4 g	2.3 g	0.5 U g	0.5 U g
24-PMW-2	V24PMW2	08-Dec-05	2.2 g	0.3 J q	0.5 U g	0.5 U g
24-PMW-3	V24PMW3	08-Dec-05	0.19 g	0.51 J q	0.5 U g	0.5 U g
24-PMW-4	V24PMW4	01-Dec-05	0.1 g	0.46 J q	0.5 U g	0.5 U g
24-PMW-5	V24PMW5	01-Dec-05	0.064 J q	0.46 J q	0.5 U g	0.5 U g
24-PMW-8	V24PMW8	05-Dec-05	0.35 ^b J q	52 J b	14 g	1.4 g
24-PMW-10	V24PMW10	08-Dec-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-PMW-10	V99W599 (D)	08-Dec-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-PMW-11	V24PMW11	16-Nov-05	0.02 U g	1.3 g	0.5 U g	0.5 U g
24-PMW-13	V24PMW13	09-Dec-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-PMW-13	V99W601(D)	09-Dec-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-PMW-18	V24PMW18	07-Dec-05	38 ^b g	0.1 J q	NA	NA
24-PMW-19	V24PMW19	16-Nov-05	0.02 U g	0.098 U g	NA	NA
24-PMW-21	V24PMW21	07-Dec-05	0.024 ^b J q	0.098 U g	NA	NA
24-PMW-22	V24PMW22	07-Dec-05	2.4 ^b g	0.098 U g	0.5 U g	0.5 U g
Intermediate Zone Wells						
24-MW-2	V24MW2	16-Nov-05	0.03 ^b J q	0.15 J q	0.5 U g	0.5 U g
24-MW-3A	V24MW3A	28-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-5A	V24MW5A	01-Dec-05	0.056 ^c J q	0.098 U g	0.5 U g	0.5 U g
24-MW-8A	V24MW8A	05-Dec-05	0.19 ^b g	0.098 U g	0.5 U g	0.5 U g
24-MW-10A	V24MW10A	08-Dec-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-11A	V24MW11A	09-Dec-05	0.02 U g	0.12 J q	0.5 U g	0.5 U g
24-MW-12A	V24MW12A	16-Nov-05	0.02 U g	0.21 J q	0.5 U g	0.5 U g
24-MW-14A	V24MW14A	28-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-15A	V24MW15A	28-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-22A	V24MW22A	29-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
Deep Zone Wells						
24-MW-3B	V24MW3B	28-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-3B	V99W592 (D)	28-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-4B	V24MW4BM	17-Nov-05	0.02 U g	0.39 J q	0.5 U g	0.5 U g
24-MW-5B	V24MW5B	01-Dec-05	0.023 J q	0.18 J q	0.5 U g	0.5 U g
24-MW-8B	V24MW8B	09-Dec-05	0.28 ^b g	0.098 U g	0.5 U g	0.5 U g
24-MW-8B	V99W602 (D)	09-Dec-05	0.28 ^b g	0.098 U g	0.5 U g	0.5 U g
24-MW-10B	V24MW10B	08-Dec-05	0.034 ^b J q	0.098 U g	0.5 U g	0.5 U g
24-MW-11B	V24MW11B	09-Dec-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-12B	V24MW12B	16-Nov-05	0.02 U g	0.48 J q	0.5 U g	0.5 U g
24-MW-13B	V24MW13B	09-Dec-05	0.21 ^b g	0.098 U g	0.5 U g	0.5 U g
24-MW-14B	V24MW14B	18-Nov-05	0.38 ^b g	0.098 U g	0.5 U g	0.5 U g
24-MW-15B	V24MW15B	18-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-16B	V24MW16B	07-Dec-05	0.044 ^b J q	0.098 U g	0.5 U g	0.5 U g
24-MW-17B	V24MW17B	17-Nov-05	0.05 ^b J q	0.098 U g	0.5 U g	0.5 U g
24-MW-19B	V24MW19B	18-Nov-05	0.02 U g	0.098 U g	NA	NA
24-MW-19B	V99W586 (D)	18-Nov-05	0.02 U g	0.098 U g	NA	NA
24-MW-20B	V24MW20B	07-Dec-05	0.02 U g	0.18 J q	NA	NA
24-MW-21B	V24MW21B	07-Dec-05	0.02 U g	0.16 J q	NA	NA
24-MW-22B	V24MW22B	07-Dec-05	0.02 U g	0.3 J b, q	0.5 U g	0.5 U g
24-MW-22B	V99W598 (D)	07-Dec-05	0.02 U g	0.68 J q	0.5 U g	0.5 U g
24-MW-23B	V24MW23B	17-Nov-05	0.065 ^b J q	0.098 U g	0.5 U g	0.5 U g
24-MW-24B	V24MW24B	17-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g
24-MW-24B	V99W585 (D)	17-Nov-05	0.02 U g	0.098 U g	0.5 U g	0.5 U g

Table 4
TPH, Ethanol, and Methanol in Groundwater
Fall 2005
EPA Method SW8015B (mg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Data Validity Qualifier(s):

- J - The analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value.
U - The analyte was not detected at or above the MDL.

Data Validity Comment(s):

- b - The surrogate spike recovery was outside quality control criteria.
g - The data met prescribed criteria as detailed in the QAPP.
q - The analyte detection was below the PQL.

Definition(s):

- (D) - duplicate sample
MDL - method detection limit
mg/L - milligrams per liter
NA - not analyzed
PQL - practical quantitation limit
QAPP - Quality Assurance Project Plan
TPH - total petroleum hydrocarbons

Note(s):

- a - Values from QAPP Addendum (Tetra Tech 2004).
b - TPHg detected in groundwater from this well were a result of chlorinated hydrocarbons in the gasoline range since no benzene, toluene, ethylbenzene, or xylenes were detected in groundwater from this well.
c - TPHg detected in groundwater from this well were a result of chlorinated hydrocarbons in the gasoline range since the benzene concentration (0.27 µg/L) is very low compared to the very high TCE concentration (120 µg/L).

Table 5.
VOCs in Groundwater
Fall 2005
EPA Method SW846OB (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	MDL ^a	PQL ^a	Primary MCL	Well ^b	Shallow Zone ^b	24-PMW-1 V24PMW1 08-Dec-05	24-PMW-1 V99W600 (D) 08-Dec-05	24-PMW-2 V24PMW2 08-Dec-05	24-PMW-3 V24PMW3 08-Dec-05	24-PMW-4 V24PMW4 01-Dec-05	24-PMW-5 V24PMW5 01-Dec-05	
Analyte														
1,1,1-TCA	0.19	1.0	200	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.21	J q	1,300
1,1,2-TCA	0.28	1.0	5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	J q	5.7
1,1,2-Trichlorotrifluoroethane	0.2	1.0	1,200	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.44	g	4.1
1,1-DCA	0.18	1.0	5	19	J b	19	J b	0.2	U g	4	U g	610	g	17
1,1-DCE	0.32	1.0	6	44	J b	43	J b	0.74	J b, q	2.2	U g	290	g	210
1,2-DCB	0.13	0.5	600	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.24	J q	220
1,2-DCA	0.06	1.0	0.5	250	g	260	g	0.2	U g	0.61	J q	1.9	g	0.2
2-Butanone	1.0	10	N/A	5	U g	5	U g	5	U g	5	U g	5	U g	5
TBA	4.4	10	N/A	5	U g	5	U g	5	U g	5	U g	5	U g	5
Acetone	0.78	10	N/A	5	U g	5	U g	5	U g	5	U g	5	U g	5
Benzene	0.07	0.4	1	1,000	g	1,100	g	2.2	J b	3.1	g	0.47	g	0.36
Bromodichloromethane	0.12	0.5	100 ^b	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2
Bromoform	0.27	1.0	100 ^b	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3
Carbon disulfide	0.48	1.0	N/A	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2
Carbon tetrachloride	0.13	1.0	0.5	0.32	J b, q	0.34	J b, q	0.2	U g	0.2	U g	0.2	U g	0.2
Chlorobenzene	0.12	0.5	70	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2
Chloroform	0.12	0.3	100 ^b	32	g	32	g	1.8	J b	0.37	g	25	g	16
cis-1,2-DCE	0.21	1.0	6	0.2	U g	0.2	U g	0.2	U g	0.2	U g	18	g	1.4
Dibromochloromethane	0.25	0.5	100 ^b	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2
DIPE	0.16	5.0	N/A	22	J b	21	J b	0.2	U g	0.2	U g	0.2	U g	0.2
Ethylbenzene	0.12	1.0	300	48	J b	46	J b	0.2	U g	0.2	U g	0.2	U g	0.2
m,p-Xylenes	0.25	2.0	1,750 ^c	150	J q	150	J q	11	J b	0.5	U g	0.5	U g	0.5
MTBE	0.3	1.0	13	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.42
o-Xylene	0.13	1.0	1,750 ^c	68	J q	71	J q	23	J b	0.2	U g	0.2	U g	0.2
PCE	0.15	1.0	5	34	J b	34	J b	2.2	J b	340	g	36	g	20
Toluene	0.11	1.0	150	30	J b	29	J b	0.42	J b, q	0.52	J q	0.2	U g	0.2
trans-1,2-DCE	0.27	1.0	10	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.34	J q	2.2
TCE	0.18	1.0	5	7.3	J b	8.2	J b	220	g	44	g	110	g	0.2
TCFM	0.22	1.0	150	0.5	U g	0.5	U g	0.5	U g	0.5	U g	120	g	66
Vinyl chloride	0.36	1.0	0.5	0.2	U g	0.2	U g	0.2	U g	24	g	0.2	U g	9.6
All other target analytes	N/A	N/A	N/A	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8260B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Analyte	MDL ^a	PQL ^a	Primary MCL	Shallow Zone Wells			24-PMW-8-2 V24PMW82 05-Dec-05			24-PMW-8-1 V24PMW81 05-Dec-05			24-PMW-9 V24PMW9 08-Dec-05			24-PMW-10 V24PMW10 08-Dec-05		
				Sample Location	Sample ID	Collection Date	24-PMW-8-3 V24PMW8 05-Dec-05	24-PMW-8-2 V24PMW82 05-Dec-05	24-PMW-8-1 V24PMW81 05-Dec-05	24-PMW-8-2 V24PMW82 05-Dec-05	24-PMW-9 V24PMW9 08-Dec-05	24-PMW-10 V24PMW10 08-Dec-05	24-PMW-8-2 V24PMW82 05-Dec-05	24-PMW-9 V24PMW9 08-Dec-05	24-PMW-10 V24PMW10 08-Dec-05			
1,1,1-TCA	0.19	1.0	200				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
1,1,2-TCA	0.28	1.0	5				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
1,1,2-Trichlorotrifluoroethane	0.2	1.0	1,200				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
1,1-DCA	0.18	1.0	5				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
1,1-DCE	0.32	1.0	6				0.2	U g	0.28	J q	1	U g	1	U g	0.2	U g		
1,2-DCE	0.13	0.5	600				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
1,2-DCB	0.06	1.0	0.5				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
1,2-DCA	1.0	1.0	N/A				500	g	5	U g	260	g	160	g	5	U g		
2-Butanone							5	U g	5	U g	25	U g	25	U g	5	U g		
TBA	4.4	10	N/A				1,400	g	5	U g	510	g	1,100	g	5	U g		
Acetone	0.78	10	N/A				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
Benzene	0.07	0.4	1				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
Bromodichloromethane	0.12	0.5	100 ^b				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
Bromoform	0.27	1.0	100 ^b				0.3	U g	0.3	U g	1.5	U g	1.5	U g	0.2	U g		
Carbon disulfide	0.48	1.0	N/A				1.1	g	0.2	U g	9.3	g	10	g	0.93	J q		
Carbon tetrachloride	0.13	1.0	0.5				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
Chlorobenzene	0.12	0.5	70				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
Chloroform	0.12	0.3	100 ^b				0.2	U g	0.41	E	1	U g	1.7	E	0.2	U g		
cis-1,2-DCE	0.21	1.0	6				130	g	50	g	10	g	11	g	0.2	U g		
Dibromochloromethane	0.25	0.5	100 ^b				0.2	U g	0.2	U g	1	U g	1	U g	0.36	J q		
DiPE	0.16	5.0	N/A				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
Ethylbenzene	0.12	1.0	300				0.23	J q	0.2	U g	1	U g	1	U g	0.2	U g		
m,p-Xylenes	0.25	2.0	1,750 ^c				0.5	U g	0.5	U g	2.5	U g	2.5	U g	0.5	U g		
MtBE	0.3	1.0	13				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
<i>o</i> -Xylene	0.13	1.0	1,750 ^c				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
PCE	0.15	1.0	5				0.2	U g	16	g	1.7	J q	1.8	J q	21	J f		
Toluene	0.11	1.0	150				0.94	J q	0.2	U g	1	U g	21	g	0.2	U g		
trans-1,2-DCE	0.27	1.0	10				0.2	U g	0.2	U g	1	U g	1	U g	0.2	U g		
TCE	0.18	1.0	5				1.8	g	190	g	30	g	61	g	1.4	g		
TCFM	0.22	1.0	150				0.5	U g	0.5	U g	2.5	U g	2.5	U g	0.5	U g		
Vinyl chloride	0.36	1.0	0.5				9.5	g	0.2	U g	1	U g	0.2	U g	0.2	U g		
All other target analytes	N/A	N/A	N/A				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8260B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Analyte	MDL ^a	PQL ^a	Primary MCL	Wells			Shallow Zone			Wells			Shallow Zone		
				24-PMW-10 V99W59 (D) 08-Dec-05	24-PMW-11 V24PMW11 16-Nov-05	24-PMW-13 V24PMW13 09-Dec-05	24-PMW-13 V99W601 (D) 09-Dec-05	24-PMW-18 V24PMW18 07-Dec-05	24-PMW-18 V24PMW18 07-Dec-05	24-PMW-19 V24PMW19 16-Nov-05	24-PMW-19 V24PMW19 16-Nov-05	24-PMW-19 V24PMW19 16-Nov-05			
1,1,1-TCA	0.19	1.0	200	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
1,1,2-TCA	0.28	1.0	5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
1,1,2-Trichlorotrifluoroethane	0.2	1.0	1,200	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
1,1-DCA	0.18	1.0	5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
1,1-DCE	0.32	1.0	6	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
1,2-DCB	0.13	0.5	600	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
1,2-DCA	0.06	1.0	0.5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
2-Butanone	1.0	10	N/A	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g
TBA	4.4	10	N/A	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g
Acetone	0.78	10	N/A	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g
Benzene	0.07	0.4	1	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Bromodichloromethane	0.12	0.5	100 ^b	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Bromoform	0.27	1.0	100 ^b	0.41	J q	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g
Carbon disulfide	0.48	1.0	N/A	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Carbon tetrachloride	0.13	1.0	0.5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Chlorobenzene	0.12	0.5	70	0.2	U g	0.2	U g	0.2	U g	0.23	J q	0.2	U g	0.2	U g
Chloroform	0.12	0.3	100 ^b	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
cis-1,2-DCE	0.21	1.0	6	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Dibromochloromethane	0.25	0.5	100 ^b	0.2	J q	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
DPE	0.16	5.0	N/A	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Ethylbenzene	0.12	1.0	300	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
<i>m,p</i> -Xylenes	0.25	2.0	1,750 ^c	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g
MTBE	0.3	1.0	13	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
<i>o</i> -Xylene	0.13	1.0	1,750 ^c	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
PCE	0.15	1.0	5	1.4	J f	1.4	U g	2.7	J f	1.6	J f	2.0	U g	0.2	U g
Toluene	0.11	1.0	150	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
<i>trans</i> -1,2-DCE	0.27	1.0	10	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
TCE	0.18	1.0	5	0.8	J q	0.24	J q	0.75	J q	0.7	J q	200	U g	0.2	U g
TCFM	0.22	1.0	150	0.5	U g	0.5	U g	0.5	U g	0.5	U g	500	U g	0.5	U g
Vinyl chloride	0.36	1.0	0.5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	200	U g	0.2	U g
All other target analytes	N/A	N/A	N/A	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 5
VOCS in Groundwater
Fall 2005
EPA Method SW8260B (µg/L)
IRP Site 24 (Entomology) Wash Rack
Vandenberg AFB, California

Analyte	MDL ^a	PQL ^a	Shallow Zone			Wells	Wells
			24-PMW-21 V24PMW21 07-Dec-05	24-PMW-22 V24PMW22 07-Dec-05	24-PMW-26 V24PMW26 29-Nov-05		
1,1,1-TCA	0.19	1.0	200	0.2	U g	0.2	U g
1,1,2-TCA	0.28	1.0	5	0.2	U g	0.2	U g
1,1,2-Trichlorotrifluoroethane	0.2	1.0	1,200	0.2	U g	0.2	U g
1,1-DCA	0.18	1.0	5	0.2	U g	0.2	U g
1,1-DCE	0.32	1.0	6	0.2	U g	0.2	U g
1,2-DCB	0.13	0.5	600	0.2	U g	0.2	U g
1,2-DCA	0.06	1.0	0.5	0.2	U g	0.2	U g
2-Butanone	1.0	1.0	N/A	5	U g	500	U g
TBA	4.4	10	N/A	5	U g	500	U g
Acetone	0.78	10	N/A	5	U g	500	U g
Benzene	0.07	0.4	1	0.2	U g	20	U g
Bromodichloromethane	0.12	0.5	100 ^b	0.2	U g	20	U g
Bromoform	0.27	1.0	100 ^b	0.3	U g	30	U g
Carbon disulfide	0.48	1.0	N/A	0.2	U g	20	U g
Carbon tetrachloride	0.13	1.0	0.5	0.2	U g	20	U g
Chlorobenzene	0.12	0.5	70	0.2	U g	20	U g
Chloroform	0.12	0.3	100 ^b	0.2	U g	20	U g
cis-1,2-DCE	0.21	1.0	6	0.2	U g	20	U g
Dibromochloromethane	0.25	0.5	100 ^b	0.2	U g	20	U g
DIPE	0.16	5.0	N/A	0.2	U g	20	U g
Ethylbenzene	0.12	1.0	300	0.2	U g	20	U g
m,p-Xylenes	0.25	2.0	1,750 ^c	0.5	U g	50	U g
MTBE	0.3	1.0	13	0.2	U g	20	U g
o-Xylene	0.13	1.0	1,750 ^c	0.2	U g	20	U g
PCE	0.15	1.0	5	36	U g	23,000	U g
Toluene	0.11	1.0	150	0.2	U g	20	U g
trans-1,2-DCE	0.27	1.0	10	0.2	U g	20	U g
TCE	0.18	1.0	5	1.2	g	49	J q
TCFM	0.22	1.0	150	0.5	U g	50	U g
Vinyl chloride	0.36	1.0	0.5	0.2	U g	20	U g
All other target analytes	N/A	N/A	ND	ND	ND	ND	ND

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8460B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Analyte	Sample Location	Sample ID	Collection Date	24-MW-2		24-MW-3A		24-MW-5A		24-MW-8A		24-MW-8A-2		24-MW-9A				
				Zone Wells	Intermediate Wells	16-Nov-05	V24MW2	V24MW3A	V24MW5A	01-Dec-05	V24MW8A	05-Dec-05	V24MW8A2	05-Dec-05	V24MW9A	08-Dec-05		
1,1,1-TCA		0.19	1.0	200	0.2	U g	0.2	U g	0.2	U g	0.84	J q	0.65	g	0.2	U g		
1,1,2-TCA		0.28	1.0	5	0.2	U g	0.2	U g	0.2	U g	1.3	g	0.32	J q	0.47	J b, q		
1,1,2-Trichlorotrifluoroethane		0.2	1.0	1,200	0.2	U g	0.2	U g	0.2	U g	27	g	0.2	U g	0.2	U g		
1,1-DCA		0.18	1.0	5	0.2	U g	0.2	U g	0.2	U g	67	g	0.2	U g	0.2	U g		
1,1-DCE		0.32	1.0	6	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g		
1,2-DCE		0.13	0.5	600	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g		
1,2-DCB		0.06	1.0	0.5	0.2	U g	0.2	U g	0.2	U g	0.53	J q	0.2	U g	0.2	U g		
1,2-DCA		1.0	N/A	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	
2-Butanone		4.4	10	N/A	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g
TBA		0.78	10	N/A	5	U g	5	U g	5	U g	5.6	J q	5	U g	5	U g	5	U g
Acetone		0.07	0.4	1	0.2	U g	0.2	U g	0.2	U g	0.27	J q	0.2	U g	0.2	U g	0.2	U g
Benzene		0.12	0.5	100 ^b	0.2	U g	0.2	U g	0.2	U g	0.6	g	0.2	U g	0.2	U g	0.2	U g
Bromodichloromethane		0.27	1.0	100 ^b	0.3	U g	0.3	U g	0.2	U g	5.9	g	0.3	U g	0.3	U g	0.3	U g
Bromoform		0.48	1.0	N/A	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Carbon disulfide		0.13	1.0	0.5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Carbon tetrachloride		0.12	0.5	70	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Chlorobenzene		0.12	0.3	100 ^b	0.22	J q	0.2	U g	0.2	U g	24	g	2.5	g	1.4	J b	0.2	U g
Chloroform		0.21	1.0	6	0.26	J q	0.2	U g	0.2	U g	1.6	g	13	g	86	E	0.2	U g
cis-1,2-DCE		0.25	0.5	100 ^b	0.2	U g	0.2	U g	0.2	U g	2.2	g	0.2	U g	0.2	U g	0.2	U g
Dibromo-chloromethane		0.16	5.0	N/A	0.2	U g	0.2	U g	0.2	U g	0.28	J q	0.2	U g	0.2	U g	0.2	U g
DPE		0.12	1.0	300	0.2	U g	0.2	U g	0.2	U g	0.4	J q	0.2	U g	0.2	U g	0.2	U g
Ethylbenzene		0.25	2.0	1,750 ^c	0.5	U g	0.5	U g	0.5	U g	0.8	J q	0.5	U g	0.5	U g	0.5	U g
m,p-Xylenes		0.3	1.0	13	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
MTBE		0.13	1.0	1,750 ^c	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
<i>o</i> -Xylene		0.15	1.0	5	12	g	0.2	U g	0.2	U g	4.8	g	11	g	27	J b	4.9	g
PCE		0.11	1.0	150	0.2	U g	0.2	U g	0.2	U g	1.2	g	0.2	U g	0.2	U g	0.2	U g
Toluene		0.27	1.0	10	0.2	U g	0.2	U g	0.2	U g	0.33	J q	0.2	U g	0.29	J b, q	0.2	U g
trans-1,2-DCE		0.18	1.0	5	61	g	0.2	U g	0.2	U g	120	g	300	g	500	g	13	g
TCE		0.22	1.0	150	0.5	U g	0.5	U g	0.5	U g	7.7	g	5	U g	25	U g	0.5	U g
TCFM		0.36	1.0	0.5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g
Vinyl chloride		N/A	N/A	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
All other target analytes																		

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8460B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Analyte	MDL ^a	PQL ^a	Primary MCL	Intermediate Wells			Zone 3 Wells		
				24-MW-10A V24MW10A 08-Dec-05	24-MW-11A V24MW11A 09-Dec-05	24-MW-12A V24MW12A 16-Nov-05	24-MW-14A V24MW14A 28-Nov-05	24-MW-15A V24MW15A 28-Nov-05	24-MW-22A V24MW22A 29-Nov-05
1,1,1-TCA	0.19	1.0	200	0.2	U g	0.2	U g	0.2	U g
1,1,2-TCA	0.28	1.0	5	0.2	U g	0.2	U g	0.2	U g
1,1,2-Trichlorotrifluoroethane	0.2	1.0	1,200	0.2	U g	0.2	U g	0.2	U g
1,1-DCA	0.18	1.0	5	0.2	U g	0.2	U g	0.2	U g
1,1-DCE	0.32	1.0	6	0.2	U g	0.2	U g	0.2	U g
1,2-DCE	0.13	0.5	600	0.2	U g	0.2	U g	0.2	U g
1,2-DCB	0.06	1.0	0.5	0.2	U g	0.2	U g	0.2	U g
1,2-DCA	1.0	10	N/A	5	U g	5	U g	5	U g
2-Butanone									
TBA	4.4	10	N/A	5	U g	5	U g	5	U g
Acetone	0.78	10	N/A	5	U g	5	U g	5	U g
Benzene	0.07	0.4	1	0.2	U g	0.2	U g	0.2	U g
Bromodichloromethane	0.12	0.5	100 ^b	0.2	U g	0.2	U g	0.2	U g
Bromoform	0.27	1.0	100 ^b	0.3	U g	1.3	U g	0.3	U g
Carbon disulfide	0.48	1.0	N/A	0.2	U g	0.2	U g	0.2	U g
Carbon tetrachloride	0.13	1.0	0.5	0.2	U g	0.2	U g	0.2	U g
Chlorobenzene	0.12	0.5	70	0.2	U g	0.2	U g	0.2	U g
Chloroform	0.12	0.3	100 ^b	0.2	U g	0.2	U g	0.2	U g
cis-1,2-DCE	0.21	1.0	6	0.2	U g	0.2	U g	0.2	U g
Dibromochloromethane	0.25	0.5	100 ^b	0.2	U g	0.59	g	0.2	U g
DIPE	0.16	5.0	N/A	0.2	U g	0.2	U g	0.2	U g
Ethylbenzene	0.12	1.0	300	0.2	U g	0.2	U g	0.2	U g
m,p-Xylenes	0.25	2.0	1,750 ^c	0.5	U g	0.5	U g	0.5	U g
MTBE	0.3	1.0	13	0.2	U g	0.2	U g	0.2	U g
<i>o</i> -Xylene	0.13	1.0	1,750 ^c	0.2	U g	0.2	U g	0.2	U g
PCE	0.15	1.0	5	3.5	g	10	g	0.2	U g
Toluene	0.11	1.0	150	0.2	U g	0.2	U g	0.2	U g
trans-1,2-DCE	0.27	1.0	10	0.2	U g	0.2	U g	0.2	U g
TCE	0.18	1.0	5	0.2	U g	0.73	J q	0.24	J q
TCFM	0.22	1.0	150	0.5	U g	0.5	U g	0.5	U g
Vinyl chloride	0.36	1.0	0.5	0.2	U g	0.2	U g	0.2	U g
All other target analytes	N/A	N/A	ND	ND	ND	ND	ND	ND	ND

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8260B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Analyte	Sample Location	Sample ID	Collection Date	MDL ^a	PQL ^a	Primary MCL	Zone 1 Wells		Zone 2 Wells		Intermediate Wells	
							24-MW-26A V24MW26A 29-Nov-05	24-MW-28A V24MW28A 08-Dec-05	24-MW-29A V24MW29A 30-Nov-05	24-MW-30A V24MW30A 30-Nov-05	24-MW-30A V24MW30A 30-Nov-05	
1,1,1-TCA		0.19	1.0	200		0.2	U g	0.2	U g	0.2	U g	0.2
1,1,2-TCA		0.28	1.0	5		0.22	J q	0.2	U g	0.2	U g	0.2
1,1,2-Trichlorotrifluoroethane		0.2	1.0	1,200		0.2	U g	0.2	U g	0.2	U g	0.2
1,1-DCA		0.18	1.0	5		0.2	U g	0.2	U g	0.2	U g	0.2
1,1-DCE		0.32	1.0	6		0.2	U g	0.2	U g	0.2	U g	0.2
1,2-DCB		0.13	0.5	600		0.2	U g	0.2	U g	0.2	U g	0.2
1,2-DCA		0.06	1.0	0.5		0.2	U g	0.2	U g	0.2	U g	0.2
2-Butanone		1.0	10	N/A		5	U g	5	U g	5	U g	5
TBA		4.4	10	N/A		5	U g	5	U g	5	U g	5
Acetone		0.78	10	N/A		5	U g	5	U g	5	U g	5
Benzene		0.07	0.4	1		0.2	U g	0.2	U g	0.2	U g	0.2
Bromodichloromethane		0.12	0.5	100 ^b		0.2	U g	0.2	U g	0.2	U g	0.2
Bromoform		0.27	1.0	100 ^b		0.3	U g	0.3	U g	0.3	U g	0.3
Carbon disulfide		0.48	1.0	N/A		0.2	U g	0.2	U g	0.2	U g	0.2
Carbon tetrachloride		0.13	1.0	0.5		0.2	U g	0.2	U g	0.2	U g	0.2
Chlorobenzene		0.12	0.5	70		0.2	U g	0.2	U g	0.2	U g	0.2
Chloroform		0.12	0.3	100 ^b		0.48	g	0.2	U g	0.2	U g	0.2
cis-1,2-DCE		0.21	1.0	6		6.5	g	0.2	U g	0.2	U g	0.2
Dibromochloromethane		0.25	0.5	100 ^b		0.2	U g	0.2	U g	0.2	U g	0.2
DIPE		0.16	5.0	N/A		0.2	U g	0.2	U g	0.2	U g	0.2
Ethylbenzene		0.12	1.0	300		0.2	U g	0.2	U g	0.2	U g	0.2
m,p-Xylenes		0.25	2.0	1,750 ^c		0.5	U g	0.5	U g	0.5	U g	0.5
MTBE		0.3	1.0	13		0.2	U g	0.2	U g	0.2	U g	0.2
o-Xylene		0.13	1.0	1,750 ^c		0.2	U g	0.2	U g	0.2	U g	0.2
PCE		0.15	1.0	5		1,600	g	30	g	21	g	0.64
Toluene		0.11	1.0	150		0.2	U g	0.2	U g	0.2	U g	0.2
trans-1,2-DCE		0.27	1.0	10		0.2	U g	0.2	U g	0.2	U g	0.2
TCE		0.18	1.0	5		11	g	0.23	J q	0.2	U g	0.2
TCFM		0.22	1.0	150		0.5	U g	0.5	U g	0.5	U g	0.5
Vinyl chloride		0.36	1.0	0.5		0.2	U g	0.2	U g	0.2	U g	0.2
All other target analytes		N/A	N/A	ND		ND	ND	ND	ND	ND	ND	ND

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8460B ($\mu\text{g/L}$)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Analyte	Sample Location	Sample ID	Collection Date	MDL ^a	PQL ^a	Primary MCL	24-MW-3B V24MW3B		24-MW-3B V99W592 (D)		24-MW-4B V24MW4BM		24-MW-5B V24MW5B		24-MW-8B V24MW8B		24-MW-9B V99W602 (D)		24-MW-9B V24MW9B	
							28-Nov-05	28-Nov-05	17-Nov-05	01-Dec-05	09-Dec-05	09-Dec-05	01-Dec-05	09-Dec-05	09-Dec-05	08-Dec-05	08-Dec-05	08-Dec-05	08-Dec-05	
1,1,1-TCA		0.19	1.0	200		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
1,1,2-TCA		0.28	1.0	5		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
1,1,2-Trichlorotrifluoroethane		0.2	1.0	1,200		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
1,1-DCA		0.18	1.0	5		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
1,1,-DCE		0.32	1.0	6		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
1,2-DCB		0.13	0.5	600		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
1,2-DCA		0.06	1.0	0.5		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
2-Butanone		1.0	10	N/A		5	U g		5	U g		5	U g		5	U g		5	U g	
TBA		4.4	10	N/A		5	U g		5	U g		5	U g		5	U g		5	U g	
Acetone		0.78	10	N/A		5	U g		5	U g		5	U g		5	U g		5	U g	
Benzene		0.07	0.4	1		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
Bromodichloromethane		0.12	0.5	100 ^b		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
Bromoform		0.27	1.0	100 ^b		0.3	U g		0.3	U g		0.3	U g		0.3	U g		0.3	U g	
Carbon disulfide		0.48	1.0	N/A		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
Carbon tetrachloride		0.13	1.0	0.5		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
Chlorobenzene		0.12	0.5	70		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
Chloroform		0.12	0.3	100 ^b		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
cis-1,2-DCE		0.21	1.0	6		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
Dibromoethane		0.25	0.5	100 ^b		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
DIPE		0.16	5.0	N/A		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
Ethylbenzene		0.12	1.0	300		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
m,p-Xylenes		0.25	2.0	1,750 ^c		0.5	U g		0.5	U g		0.5	U g		0.5	U g		0.5	U g	
MTBE		0.3	1.0	13		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
<i>o</i> -Xylene		0.13	1.0	1,750 ^c		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
PCE		0.15	1.0	5		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
Toluene		0.11	1.0	150		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
<i>trans</i> -1,2-DCE		0.27	1.0	10		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.24	J q	
TCE		0.18	1.0	5		1.8	U g		1.7	U g		0.2	U g		0.2	U g		0.2	U g	
TCFM		0.22	1.0	150		0.5	U g		0.5	U g		0.5	U g		0.5	U g		0.78	J q	
Vinyl chloride		0.36	1.0	0.5		0.2	U g		0.2	U g		0.2	U g		0.2	U g		0.2	U g	
All other target analytes		N/A	N/A	ND		ND	ND		ND	ND		ND	ND		ND	ND	ND	ND	ND	

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8460B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Analyte	MDL ^a	PQL ^a	Primary MCL	Deep Zone Wells			Well 15			24-MW-10B V24MW10B 17-Nov-05			24-MW-11B V24MW11B 09-Dec-05			24-MW-12B V24MW12B 16-Nov-05			24-MW-13B V24MW13B 09-Dec-05			24-MW-14B V24MW14B 18-Nov-05			24-MW-15B V24MW15B 18-Nov-05			24-MW-16B V24MW16B 07-Dec-05		
				Sample Location	Sample ID	Collection Date	24-MW-10B V24MW10B 17-Nov-05	24-MW-11B V24MW11B 09-Dec-05	24-MW-12B V24MW12B 16-Nov-05	24-MW-13B V24MW13B 09-Dec-05	24-MW-14B V24MW14B 18-Nov-05	24-MW-15B V24MW15B 18-Nov-05	24-MW-16B V24MW16B 07-Dec-05																	
1,1,1-TCA	0.19	1.0	200	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
1,1,2-TCA	0.28	1.0	5	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
1,1,2-Trichlorotrifluoroethane	0.2	1.0	1,200	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
1,1-DCA	0.18	1.0	5	0.18	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.25	J q	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
1,1-DCE	0.32	1.0	6	0.32	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
1,2-DCB	0.13	0.5	600	0.13	U g	0.2	U g	0.3	J q	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
1,2-DCA	0.06	1.0	0.5	0.06	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
2-Butanone	1.0	10	N/A	1.0	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	
TBA	4.4	10	N/A	4.4	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	
Acetone	0.78	10	N/A	0.78	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	5	U g	
Benzene	0.07	0.4	1	0.07	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
Bromodichloromethane	0.12	0.5	100 ^b	0.12	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
Bromoform	0.27	1.0	100 ^b	0.27	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	0.3	U g	
Carbon disulfide	0.48	1.0	N/A	0.48	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
Carbon tetrachloride	0.13	1.0	0.5	0.13	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
Chlorobenzene	0.12	0.5	70	0.12	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
Chloroform	0.12	0.3	100 ^b	0.12	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
cis-1,2-DCE	0.21	1.0	6	0.21	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.31	J q	4.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
Dibromochloromethane	0.25	0.5	100 ^b	0.25	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
DIPE	0.16	5.0	N/A	0.16	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
Ethylbenzene	0.12	1.0	300	0.12	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
m,p-Xylenes	0.25	2.0	1,750 ^c	0.25	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	
MTBE	0.3	1.0	13	0.3	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
o-Xylene	0.13	1.0	1,750 ^c	0.13	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.34	J q	6.1	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
PCE	0.15	1.0	5	0.15	U g	93	U g	0.83	J q	0.2	U g	0.2	U g	0.2	U g	590	U g	22	U g	0.2	U g	0.2	U g	68	U g	0.2	U g	0.2	U g	
Toluene	0.11	1.0	150	0.11	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
trans-1,2-DCE	0.27	1.0	10	0.27	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
TCE	0.18	1.0	5	0.18	U g	1.1	U g	0.34	J q	0.2	U g	0.2	U g	0.2	U g	6.1	U g	1,000	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
TCFM	0.22	1.0	150	0.22	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	2	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	0.5	U g	
Vinyl chloride	0.36	1.0	0.5	0.36	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	0.2	U g	
All other target analytes	N/A	N/A	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8260B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	Deep Zone Wells			24-MW-17B V24MW17B 17-Nov-05			24-MW-19B V24MW19B 18-Nov-05			24-MW-20B V24MW20B 07-Dec-05			24-MW-21B V24MW21B 07-Dec-05			24-MW-22B V24MW22B 07-Dec-05			
			MDL ^a	PQL ^a	Primary MCL																
Analyte																					
1,1,1-TCA			0.19	1.0	200																
1,1,2-TCA			0.28	1.0	5																
1,1,2-Trichlorotrifluoroethane			0.2	1.0	1,200																
1,1-DCA			0.18	1.0	5																
1,1-DCE			0.32	1.0	6																
1,2-DCB			0.13	0.5	600																
1,2-DCA			0.06	1.0	0.5																
2-Butanone			1.0	10	N/A																
TBA			4.4	10	N/A																
Acetone			0.78	10	N/A																
Benzene			0.07	0.4	1																
Bromodichloromethane			0.12	0.5	100 ^b																
Bromoform			0.27	1.0	100 ^b																
Carbon disulfide			0.48	1.0	N/A																
Carbon tetrachloride			0.13	1.0	0.5																
Chlorobenzene			0.12	0.5	70																
Chloroform			0.12	0.3	100 ^b																
cis-1,2-DCE			0.21	1.0	6																
Dibromochloromethane			0.25	0.5	100 ^b																
DIFE			0.16	5.0	N/A																
Ethylbenzene			0.12	1.0	300																
m,p-Xylenes			0.25	2.0	1,750 ^c																
MTBE			0.3	1.0	13																
<i>o</i> -Xylene			0.13	1.0	1,750 ^c																
PCE			0.15	1.0	5																
Toluene			0.11	1.0	150																
trans-1,2-DCE			0.27	1.0	10																
TCE			0.18	1.0	5																
TCFM			0.22	1.0	150																
Vinyl chloride			0.36	1.0	0.5																
All other target analytes			N/A	N/A	ND																ND

Table 5
VOCs in Groundwater
Fall 2005
EPA Method SW8260B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Analyte	Sample Location	Sample ID	Collection Date	MDL ^a	PQL ^a	Primary MCL	24-MW-23B V24MW23B		24-MW-24B V24MW24B		24-MW-24B V99W585 (D)		24-MW-25B V24MW25B		24-MW-26B V24MW26B		24-MW-27B V24MW27B	
							17-Nov-05	17-Nov-05	17-Nov-05	17-Nov-05	17-Nov-05	17-Nov-05	17-Nov-05	17-Nov-05	30-Nov-05	30-Nov-05	07-Dec-05	
1,1,1-TCA		0.19	1.0	200		0.2	U g	1	0.2	U g	1	0.2	U g	1	0.2	U g	0.2	U g
1,1,2-TCA		0.28	1.0	5		0.2	U g	1	0.2	U g	1	0.2	U g	1	0.2	U g	0.2	U g
1,1,2-Trichlorotrifluoroethane		0.2	1.0	1,200		0.58	J q		0.2	U g		0.2	U g		0.2	U g	0.2	U g
1,1-DCA		0.18	1.0	5		0.43	J q		0.2	U g		0.2	U g		0.2	U g	0.2	U g
1,1-DCE		0.32	1.0	6		0.28	J q		0.2	U g		0.2	U g		0.2	U g	0.2	U g
1,2-DCB		0.13	0.5	600		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
1,2-DCA		0.06	1.0	0.5		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
2-Butanone		1.0	10	N/A		5	U g		5	U g		5	U g		5	U g	5	U g
TBA		4.4	10	N/A		5	U g		5	U g		5	U g		5	U g	5	U g
Acetone		0.78	10	N/A		5	U g		5	U g		5	U g		5	U g	5	U g
Benzene		0.07	0.4	1		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
Bromodichloromethane		0.12	0.5	100 ^b		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
Bromoform		0.27	1.0	100 ^b		0.3	U g		0.3	U g		0.3	U g		0.3	U g	0.3	U g
Carbon disulfide		0.48	1.0	N/A		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
Carbon tetrachloride		0.13	1.0	0.5		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
Chlorobenzene		0.12	0.5	70		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
Chloroform		0.12	0.3	100 ^b		1.5	g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
cis-1,2-DCE		0.21	1.0	6		1.1	g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
Dibromochloromethane		0.25	0.5	100 ^b		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
DiPE		0.16	5.0	N/A		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
Ethylbenzene		0.12	1.0	300		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
m,p-Xylenes		0.25	2.0	1,750 ^c		0.5	U g		0.5	U g		0.5	U g		0.5	U g	0.5	U g
MTBE		0.3	1.0	13		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
<i>o</i> -Xylene		0.13	1.0	1,750 ^c		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
PCE		0.15	1.0	5		12	g		0.2	U g		0.2	U g		45	g	43	g
Toluene		0.11	1.0	150		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
trans-1,2-DCE		0.27	1.0	10		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
TCE		0.18	1.0	5		140	g		0.2	U g		0.2	U g		0.32	J q	0.48	J q
TCFM		0.22	1.0	150		10	g		0.5	U g		0.5	U g		0.5	U g	0.5	U g
Vinyl chloride		0.36	1.0	0.5		0.2	U g		0.2	U g		0.2	U g		0.2	U g	0.2	U g
All other target analytes		N/A	N/A	ND		ND	ND		ND	ND		ND	ND		ND	ND	ND	ND

Table 5
VOCs in Groundwater
Summer 2005
EPA Method SW8260B (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Data Validity Qualifier(s):	Comment(s):
J	<ul style="list-style-type: none"> - The surrogate spike recovery was outside quality control criteria.
f	<ul style="list-style-type: none"> - The duplicate/rePLICATE sample's relative percent difference was outside the control limit.
g	<ul style="list-style-type: none"> - The data met prescribed criteria as detailed in the QAPP.
q	<ul style="list-style-type: none"> - The analyte detection was below the PQL.
Definition(s):	
(D)	- duplicate sample
DCA	- dichloroethane
DCB	- dichlorobenzene
DCE	- dichloroethene
DIPE	- diisopropyl ether
MCL	- maximum contaminant level
MDL	- method detection limit
MTBE	- methyl-tert-butyl ether
µg/L	- micrograms per liter
N/A	- not applicable
PCE	- tetrachloroethene
PQL	- practical quantitation limit
QAPP	- Quality Assurance Project Plan
TBA	- <i>tert</i> -Butanol
TCA	- trichloroethane
TCE	- trichloroethene
TCFM	- trichlorofluoromethane

Note(s):

Bold type indicates results that were above the MCL.

The California Department of Health Services notification level for TBA is 12 µg/L.

a - Values from QAPP Addendum (Tetra Tech 2004).

b - For total trihalomethanes (sum of bromoform, bromodichloromethane, chloroform, and dibromochloromethane).

c - MCL of 1,750 µg/L applies to sum of *m*-xylene, *o*-xylene, and *p*-xylene.

Table 6
1,4-Dioxane and SVOCs in Groundwater
Fall 2005
EPA Methods Modified SW8270C SIM and SW8270C (µg/L)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Sample ID	Collection Date	1,4-Dioxane				bis(2-Ethylhexyl) phthalate				2-Methylnaphthalene				Phenol				All Other Target				
			MDL ¹	0.5	21	10	2.3	50	1.8	10	1.8	50	1.0	10	2.4	4.8	U g	6.7	J q	4.8	U g	N/A	
Shallow Zone Wells																							
24-PMW-1	V24PMW1	08-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	ND	
24-PMW-1	V99W600 (D)	08-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	ND	
24-PMW-2	V24PMW2	08-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	ND	
24-PMW-3	V24PMW3	08-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	ND	
24-PMW-4	V24PMW4	01-Dec-05	310	g	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND
24-PMW-5	V24PMW5	01-Dec-05	100	g	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND
24-PMW-5	V99W556 (D)	01-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	ND	
24-PMW-8	V24PMW8	05-Dec-05	NA	2,300	J b	50	U g	50	U g	50	U g	50	U g	50	U g	50	U g	50	U g	50	U g	2,900	
24-PMW-10	V24PMW10	08-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-PMW-11	V24PMW11	16-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-PMW-13	V24PMW13	09-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-PMW-22	V24PMW22	07-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
Intermediate Zone Wells																							
24-MW-2	V24MW2	16-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-3A	V24MW3A	28-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-5A	V24MW5A	01-Dec-05	95	g	10	U g	6.1	J q	6.1	J q	6.1	J q	6.1	J q	6.1	J q	4.9	U g	4.9	U g	4.8	U g	ND
24-MW-8A	V24MW8A	05-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	ND	
24-MW-10A	V24MW10A	08-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-11A	V24MW11A	09-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-12A	V24MW12A	16-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-14A	V24MW14A	28-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-15A	V24MW15A	28-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-22A	V24MW22A	29-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
Deep Zone Wells																							
24-MW-3B	V24MW3B	28-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-3B	V99W592 (D)	28-Nov-05	NA	10	U g	5.9	J q	5.9	J q	5.9	J q	5.9	J q	5.9	J q	4.8	U g	4.9	U g	4.8	U g	ND	
24-MW-4B	V24MW4BM	17-Nov-05	NA	9.9	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	ND	
24-MW-5B	V24MW5B	01-Dec-05	790	g	10	U g	12	g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND
24-MW-8B	V24MW8B	09-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-8B	V99W602 (D)	09-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-10B	V24MW10B	17-Nov-05	NA	9.9	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	ND	
24-MW-11B	V24MW11B	09-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-12B	V24MW12B	16-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-13B	V24MW13B	09-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-14B	V24MW14B	18-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-15B	V24MW15B	18-Nov-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.9	U g	4.9	U g	4.8	U g	ND	
24-MW-16B	V24MW16B	07-Dec-05	NA	10	U g	5.6	J q	5.6	J q	5.6	J q	5.6	J q	5.6	J q	4.8	UJ p	4.8	UJ p	4.8	UJ p	ND	
24-MW-17B	V24MW17B	17-Nov-05	NA	9.9	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	ND	
24-MW-22B	V24MW22B	07-Dec-05	NA	10	U g	97	U g	97	U g	97	U g	97	U g	97	U g	98	UJ c	98	UJ c	98	UJ c	ND	
24-MW-22B	V99W598 (D)	07-Dec-05	NA	10	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	4.8	U g	ND	
24-MW-23B	V24MW23B	17-Nov-05	NA	9.9	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	ND	
24-MW-24B	V24MW24B	17-Nov-05	NA	9.9	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	ND	
24-MW-24B	V99W585 (D)	17-Nov-05	NA	9.9	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	4.8	UJ p	ND	

Table 6
1,4-Dioxane and SVOCs in Groundwater
Fall 2005
EPA Methods Modified SW82/70C SIM and SW8270C ($\mu\text{g/L}$)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Data Validity Qualifier(s):	
J	- The analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value.
U	- The analyte was not detected at or above the MDL.
UJ	- The analyte was not detected above the MDL; however, the MDL is uncertain and may be elevated above normal levels.
Data Validity Comment(s):	
b	- The surrogate spike recovery was outside quality control criteria.
e	- A holding time violation occurred.
g	- The data met prescribed criteria as detailed in the QAPP.
p	- Professional judgement determined the data should be qualified.
q	- The analyte detection was below the PQL.
Definition(s):	
(D)	- duplicate sample
MDL	- method detection limit
$\mu\text{g/L}$	- micrograms per liter
N/A	- not applicable
NA	- not analyzed
ND	- Not detected; result is less than the MDL.
PQL	- practical quantitation limit
QAPP	- Quality Assurance Project Plan
SVOC	- semivolatile organic compound
Note(s):	
Bold type indicates results that were above the MCL.	
The California Department of Health Services notification level for 1,4-dioxane is 3 $\mu\text{g/L}$.	
1	- Values from QAPP Addendum (Tetra Tech 2004).

Table 7
OCPs and OPPs in Groundwater
Fall 2005
EPA Methods SW8081B and SW8141A ($\mu\text{g/L}$)
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location			24-PMW-1	24-PMW-1		24-PMW-2		24-PMW-3	
Sample ID			V24PMW1	V99W600 (D)		V24PMW2		V24PMW3	
Collection Date			08-Dec-05	08-Dec-05		08-Dec-05		08-Dec-05	
Analyte	MDL ¹	PQL ¹	Primary MCL						
OCPs									
4,4'-DDE	0.003	0.1	N/A	0.032	J q	0.099	g	0.019	U g
Aldrin	0.002	0.1	N/A	0.088	J q	0.087	J q	0.019	U g
alpha-BHC	0.002	0.1	N/A	0.019	U g	0.14	g	0.019	U g
beta-BHC	0.005	0.1	N/A	0.1	J f	0.15	J f	0.019	U g
delta-BHC	0.003	0.1	N/A	0.051	J q	0.06	J q	0.019	U g
Endosulfan I	0.002	0.1	N/A	0.019	U g	0.092	J q	0.019	U g
gamma-BHC (Lindane)	0.002	0.1	0.2	0.096	g	0.019	U g	0.019	U g
All other target analytes	N/A	N/A	N/A	ND		ND		ND	
OPPs									
All target analytes	N/A	N/A	N/A	ND		ND		ND	

Data Validity Qualifier(s):

- J - The analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value.
- U - The analyte was not detected at or above the MDL.

Data Validity Comment(s):

- f - The duplicate/replicate sample's relative percent difference was outside the control limit.
- g - The data met prescribed criteria as detailed in the QAPP.
- q - The analyte detection was below the PQL.

Definition(s):

- BHC - benzene hexachloride
- DDE - dichlorodiphenyldichloroethene
- MDL - method detection limit
- $\mu\text{g/L}$ - micrograms per liter
- N/A - not applicable
- ND - Not detected; result is less than the MDL.
- OCP - organochlorine pesticide
- OPP - organophosphorous pesticide
- PQL - practical quantitation limit
- QAPP - Quality Assurance Project Plan

Note(s):

- 1 - Values from QAPP Addendum (Tetra Tech 2004).

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	PCE ^a (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	102	96.4	NA	103	NA	NA	NA	32	55	54	38	34
24-PMW-2	0.811	2.6	NA	1.8	NA	NA	NA	0.5	0.78	1.1	0.76	2.2
24-PMW-3	751	361	NA	380	NA	NA	NA	490	770	380	140	340
24-PMW-4	19.3	25.2	NA	31.1	NA	NA	NA	24	50	39	24	36
24-PMW-5	18.7	91.1	NA	27.3	NA	NA	NA	20	18	19	19	20
24-PMW-8	NA	41.6	30.8	67.7	38.2	33.4	25.9	4.7	3	4.2	0.27	ND
24-PMW-8-2	NA	NA	33.4	42.3	30.7	28.6	27.4	7	7.2	27	17	16
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	29	1.7	10	12	1.7
24-PIW-8-2	NA	NA	44	12.9	2.6	13.6	3.3	65	20	18	12	1.8
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	10	6.9	10
24-PMW-10	NA	0.52	NA	10.8	NA	NA	NA	7.6	3.6	4.4	3.4	21
24-PMW-11	NA	1.3	NA	1.3	NA	NA	NA	1	1.6	1.8	0.85	1.4
24-PMW-13	NA	1.1	NA	0.74	NA	NA	NA	DRY	1.2	2.5	0.26	2.7
24-PMW-18	NA	108,000	NA	185,000	NA	NA	NA	24,000	78,000	92,000	61,000	83,000
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-21	NA	NA	NA	38.1	NA	NA	NA	34	36	38	41	36
24-PMW-22	NA	NA	NA	8,940	NA	NA	NA	660	15,000	17,000	20,000	23,000
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	3.9	0.67	0.21	0.94
Intermediate Zone Wells												
24-MW-2	10.3	8.1	NA	14.5	NA	NA	NA	19	27	15	12	12
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	3.67	37.7	NA	5.1	NA	NA	NA	17	4.1	3.6	5.8	4.8
24-MW-6	NA	NA	NA	0.3	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	ND	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	6.9	NA	10.2	NA	NA	NA	18	14	14	12	11
24-MW-8A-2	NA	NA	27.3	47.3	37.9	34.1	29.5	47	52	38	40	27
24-MW-9A	NA	1.4	NA	0.48	NA	NA	NA	4.7	1.4	1.4	1.1	4.9
24-MW-10A	NA	0.42	NA	0.32	NA	NA	NA	1.6	0.48	1.3	0.85	3.5
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	1.6	62	3.1	0.55	10
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	6.8	0.82	ND	ND
24-MW-13A	NA	60.1	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	32.1	NA	NA	NA	24	33	39	36	47
24-MW-26A	NA	NA	NA	1,990	NA	NA	NA	2,500	3,300	3,000	3,500	1,600
24-MW-28A	NA	NA	NA	27.6	NA	NA	NA	48	31	46	39	30
24-MW-29A	NA	NA	NA	37.6	NA	NA	NA	4.5	38	37	32	21
24-MW-30A	NA	NA	NA	0.49	NA	NA	NA	ND	ND	0.86	ND	0.64
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-5B	8.22	59.1	NA	18.3	NA	NA	NA	NA	19	18	16	12
24-MW-8B	NA	25.9	NA	42.4	NA	NA	NA	33	51	44	40	43
24-MW-9B	NA	ND	NA	0.32	NA	NA	NA	0.6	0.27	0.33	0.21	0.78
24-MW-10B	NA	45.0	NA	76.1	NA	NA	NA	52	100	80	82	93
24-MW-11B	NA	0.32	NA	0.31	NA	NA	NA	0.29	0.81	0.35	ND	0.83
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	0.42	ND	ND	ND
24-MW-13B	NA	98.1	NA	306	NA	NA	NA	370	470	460	620	590
24-MW-14B	NA	8.3	NA	13	NA	NA	NA	14	24	14	18	22
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-16B	NA	1.1	NA	ND	NA	NA	NA	ND	ND	ND	ND	68
24-MW-17B	NA	1.4	NA	2.8	NA	NA	NA	4	5.4	5.5	4.4	4.7
24-MW-19B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-20B	NA	NA	NA	16.7	NA	NA	NA	34	50	69	100	20
24-MW-21B	NA	NA	NA	1.3	NA	NA	NA	0.55	2.4	ND	1.9	ND
24-MW-22B	NA	NA	NA	7.7	NA	NA	NA	30	8.7	4.4	5.6	5.2
24-MW-23B	NA	NA	NA	2.5	NA	NA	NA	ND	ND	7.2	9.4	12
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	2.4	0.52	0.22	ND
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	ND	ND	0.44	0.54	ND
24-MW-26B	NA	NA	NA	8.8	NA	NA	NA	33	58	65	65	45
24-MW-27B	NA	NA	NA	72.2	NA	NA	NA	3.1	86	83	66	43
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	TCE ^b (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	10.6	16.8	NA	8.1	NA	NA	NA	6.8	9.5	15	7.3	8.2
24-PMW-2	355	230	NA	248	NA	NA	NA	190	300	290	220	220
24-PMW-3	16.2	24.4	NA	28.3	NA	NA	NA	26	72	41	17	44
24-PMW-4	164	147	NA	167	NA	NA	NA	120	62	79	80	110
24-PMW-5	84.3	84.4	NA	50	NA	NA	NA	52	45	54	33	130
24-PMW-8	NA	758	399	595	417	759	342	4.4	15	53	4.8	1.8
24-PMW-8-2	NA	NA	393	358	287	586	293	3	55	540	420	190
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	150	18	110	180	30
24-PIW-8-2	NA	NA	348	330	57.3	281	107	260	320	300	380	61
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	2.6	2	1.4
24-PMW-10	NA	0.49	NA	3.8	NA	NA	NA	2	1.8	0.82	2	1
24-PMW-11	NA	1.0	NA	0.53	NA	NA	NA	0.57	0.25	0.33	0.46	0.24*
24-PMW-13	NA	0.51	NA	ND	NA	NA	NA	DRY	0.61	0.69	ND	0.75
24-PMW-18	NA	61.2	NA	72.8	NA	NA	NA	76	62	72	82	ND ^k
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-PMW-21	NA	NA	NA	1.1	NA	NA	NA	1	1.5	1.3	1.2	1.2
24-PMW-22	NA	NA	NA	23.8	NA	NA	NA	5.6	65	ND	42	49
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	0.52	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	45.7	50.7	NA	125	NA	NA	NA	150	210	130	97	61*
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	6.5	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	164	127	NA	89.6	NA	NA	NA	29	95	190	140	120
24-MW-6	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	4.0	11.6	NA	9.9	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	271	NA	381	NA	NA	NA	270	410	430	440	300
24-MW-8A-2	NA	NA	397	452	365	688	349	900	960	610	930	500
24-MW-9A	NA	8.3	NA	4.7	NA	NA	NA	9.3	13	13	12	13
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	0.24	0.81	ND	4	ND
24-MW-11A	NA	ND	NA	0.71	NA	NA	NA	0.98	20	1.1	0.69	0.73
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	0.25	ND	0.26	ND*
24-MW-13A	NA	1.3	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	1.4	0.63	2.4	0.38	0.24
24-MW-15A	NA	2.0	NA	ND	NA	NA	NA	ND	ND	1.1	0.26	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	0.64	0.35	0.27	0.23	0.27
24-MW-26A	NA	NA	NA	17.9	NA	NA	NA	17	28	20	23	11
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	0.29	0.26	0.53	0.4	0.23
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	2.23	0.97	NA	1.6	NA	NA	NA	0.3	8.8	3.6	1.9	1.8
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-5B	20.2	32.8	NA	35.9	NA	NA	NA	NA	39	38	31	28
24-MW-8B	NA	522	NA	773	NA	NA	NA	620	730	690	660	640
24-MW-9B	NA	2.2	NA	8.4	NA	NA	NA	2.2	1.9	4.4	3.2	3.6
24-MW-10B	NA	0.50	NA	0.53	NA	NA	NA	0.64	0.73	0.96	1.3	1.1*
24-MW-11B	NA	0.36	NA	ND	NA	NA	NA	0.37	0.72	0.45	0.34	0.34
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-13B	NA	10.9	NA	4.7	NA	NA	NA	8.2	6.6	6	5.1	6.1
24-MW-14B	NA	672	NA	908	NA	NA	NA	690	1,400	910	1,000	1,000*
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	1.2	ND	0.59	ND*
24-MW-16B	NA	1.3	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	82.1	NA	131	NA	NA	NA	130	180	130	110	110*
24-MW-19B	NA	NA	NA	3.2	NA	NA	NA	2.5	4.2	4.1	2.9	3.3*
24-MW-20B	NA	NA	NA	0.98	NA	NA	NA	2.2	4.4	3.3	4.6	4.5
24-MW-21B	NA	NA	NA	11.1	NA	NA	NA	7.5	4.1	10	9.7	3
24-MW-22B	NA	NA	NA	2.6	NA	NA	NA	1.1	0.35	0.94	1.4	2.3
24-MW-23B	NA	NA	NA	86.4	NA	NA	NA	1.8	2.2	100	120	140*
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	0.25	ND	ND	ND*
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	2.4	2	ND	7.4	ND*
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	0.22	0.35	0.42	0.41	0.32
24-MW-27B	NA	NA	NA	0.78	NA	NA	NA	ND	1.3	1	1	0.48
24-MW-31B	NA	NA	NA	2.5	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	cis-1,2-DCE ^c (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	ND	ND	NA	4.0	NA	NA	NA	ND	5.4	5.5	ND	ND
24-PMW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-3	14.4	37	NA	103	NA	NA	NA	12	37	28	18	18
24-PMW-4	2.44	3.1	NA	2.0	NA	NA	NA	1.2	0.84	1.2	0.96	1.4
24-PMW-5	2.37	2.3	NA	1.1	NA	NA	NA	1.1	1.5	1.6	1.8	2.2
24-PMW-8	NA	154	90.8	125	87.1	109	111	340	73	92	170	130
24-PMW-8-2	NA	NA	190	156	127	227	171	540	14	120	110	50
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	24	1.7	9.4	16	10
24-PIW-8-2	NA	NA	56.4	30.7	6.2	63.0	13.7	43	43	34	34	11
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	ND	ND	ND
24-PMW-10	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-PMW-13	NA	ND	NA	ND	NA	NA	NA	DRY	ND	0.21	ND	ND
24-PMW-18	NA	18.7	NA	23.8	NA	NA	NA	74	35	31	94	ND ^k
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-PMW-21	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	4.0	NA	NA	NA	0.5	7.7	8.7	9.1	ND ^k
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	0.193	ND	NA	0.62	NA	NA	NA	1.2	1.8	0.53	0.49	0.26 [*]
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	0.3	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	2.67	1.2	NA	0.89	NA	NA	NA	9.5	1.3	2	1.7	1.6
24-MW-6	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	ND	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	13.7	NA	18.1	NA	NA	NA	8.9	14	13	14	13
24-MW-8A-2	NA	NA	94.1	108	95.5	124	127	110	120	82	100	86
24-MW-9A	NA	0.30	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	ND	1.2	ND	ND	ND
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-13A	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	13.2	NA	NA	NA	12	15	11	12	6.5
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-5B	21.1	14.4	NA	12.7	NA	NA	NA	NA	13	12	14	21
24-MW-8B	NA	75.2	NA	62.4	NA	NA	NA	66	76	65	59	61
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-11B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-13B	NA	2.5	NA	0.64	NA	NA	NA	0.82	0.25	0.31	0.24	0.31
24-MW-14B	NA	1.3	NA	2.5	NA	NA	NA	2.7	4	2.6	3.3	4.2 [*]
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-16B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	0.67	NA	1.4	NA	NA	NA	1.5	1.9	1.7	1.2	1.4 [*]
24-MW-19B	NA	NA	NA	8.7	NA	NA	NA	6	9.4	8.6	7.1	10 [*]
24-MW-20B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	0.46	7.3
24-MW-21B	NA	NA	NA	1.1	NA	NA	NA	12	0.74	13	15	22
24-MW-22B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	2.1	2.7
24-MW-23B	NA	NA	NA	ND	NA	NA	NA	ND	ND	0.64	0.86	1.1 [*]
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-27B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Vinyl chloride ^g (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-3	ND	0.66	NA	3.3	NA	NA	NA	120	22	65	66	24
24-PMW-4	ND	ND	NA	ND	NA	NA	NA	20	11	0.6	ND	ND
24-PMW-5	ND	ND	NA	ND	NA	NA	NA	ND	0.5	0.21	3.1	9.6
24-PMW-8	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.5
24-PMW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	ND	0.56	0.2	ND	ND
24-PIW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	5.5	0.27	0.66	ND
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	ND	ND	ND
24-PMW-10	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-PMW-13	NA	ND	NA	ND	NA	NA	NA	DRY	ND	ND	ND	ND
24-PMW-18	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-PMW-21	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	ND	ND	NA	ND	NA	NA	NA	0.79	ND	ND	ND	ND
24-MW-6	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	ND	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-8A-2	NA	NA	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND
24-MW-9A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-13A	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-5B	ND	ND	NA	ND	NA	NA	NA	NA	0.42	0.29	0.8	3.6
24-MW-8B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-11B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-13B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-14B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-16B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-19B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-20B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-21B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-23B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-27B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	1,1-DCE ^d ($\mu\text{g/L}$)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	104	55.2	NA	66.7	NA	NA	NA	45	37	50	57	44
24-PMW-2	1.49	1.3	NA	ND	NA	NA	NA	0.9	1.5	1	0.93	0.74
24-PMW-3	5.93	8.2	NA	5.2	NA	NA	NA	3.1	5.5	3.3	0.98	2.2
24-PMW-4	161	192	NA	385	NA	NA	NA	400	470	350	200	290
24-PMW-5	173	192	NA	278	NA	NA	NA	250	220	220	170	220
24-PMW-8	NA	0.72	ND	ND	ND	ND	ND	0.54	0.21	0.38	0.29	ND
24-PMW-8-2	NA	NA	0.44	ND	ND	ND	ND	0.38	1.1	ND	0.29	0.25
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PIW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	ND	ND	ND
24-PMW-10	NA	ND	NA	ND	NA	NA	NA	NA	ND	ND	ND	ND
24-PMW-11	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-13	NA	ND	NA	ND	NA	NA	NA	DRY	ND	ND	ND	ND
24-PMW-18	NA	2.9	NA	3.1	NA	NA	NA	1.6	1.8	ND	1.4	ND
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-21	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	ND	NA	NA	NA	ND	0.85	0.67	0.73	ND
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	89.2	81	NA	55.7	NA	NA	NA	670	73	66	94	67
24-MW-6	NA	NA	NA	1.0	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	0.63	2.0	NA	1.8	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	1.6	NA	ND	NA	NA	NA	0.22	0.47	0.24	ND	ND
24-MW-8A-2	NA	NA	ND	ND	ND	ND	ND	0.26	0.31	ND	0.2	ND
24-MW-9A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	0.9	0.4	ND	ND	ND
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-13A	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-5B	529	771	NA	820	NA	NA	NA	NA	880	580	590	540
24-MW-8B	NA	0.58	NA	0.76	NA	NA	NA	0.53	ND	0.57	0.6	0.66
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-13B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-14B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-16B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-19B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-20B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-21B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-23B	NA	NA	NA	ND	NA	NA	NA	ND	ND	0.26	0.23	0.28
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-27B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	1,1,1-TCA ^a (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	ND	7.2	NA	5.7	NA	NA	NA	0.57	3	2.4	3	ND
24-PMW-2	ND	1.6	NA	ND	NA	NA	NA	ND	ND	ND	1.1	ND
24-PMW-3	12.4	8.6	NA	5.3	NA	NA	NA	0.89	1	0.89	ND	0.21
24-PMW-4	684	757	NA	1,370	NA	NA	NA	1,700	5,000	2,600	1,100	1,300
24-PMW-5	886	794	NA	2,200	NA	NA	NA	1,500	1,500	1,300	1,800	480
24-PMW-8	NA	ND	ND	ND	ND	ND	ND	ND	ND	1.3	0.31	ND
24-PMW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PIW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	ND	ND	ND
24-PMW-10	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-13	NA	ND	NA	ND	NA	NA	NA	DRY	ND	ND	ND	ND
24-PMW-18	NA	0.30	NA	0.3	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-21	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	195	156	NA	127	NA	NA	NA	77	65	80	62	65
24-MW-6	NA	NA	NA	1.3	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	ND	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-8A-2	NA	NA	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND
24-MW-9A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	0.29	ND	ND	ND	ND
24-MW-13A	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	0.59	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-5B	101	136	NA	136	NA	NA	NA	NA	110	95	95	83
24-MW-8B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-13B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-14B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-16B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-19B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-20B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-21B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-23B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-27B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	1,1,2-TCA [†] (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	ND	ND	NA	ND	NA	NA	NA	ND	10	38	12	ND
24-PMW-2	ND	ND	NA	ND	NA	NA	NA	ND	1.2	0.46	ND	ND
24-PMW-3	ND	ND	NA	ND	NA	NA	NA	ND	0.36	0.39	ND	ND
24-PMW-4	1.73	3.5	NA	5.4	NA	NA	NA	9.9	17	11	6.3	5.7
24-PMW-5	2.16	3.1	NA	10.8	NA	NA	NA	13	16	12	12	4.1
24-PMW-8	NA	ND	ND	0.76	0.49	0.33	0.5	ND	ND	ND	ND	ND
24-PMW-8-2	NA	NA	ND	ND	ND	0.31	ND	ND	ND	0.21	ND	ND
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PIW-8-2	NA	NA	0.63	ND	ND	ND	ND	ND	ND	0.21	0.63	ND
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	ND	ND	ND
24-PMW-10	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-PMW-13	NA	ND	NA	ND	NA	NA	NA	DRY	ND	ND	ND	ND
24-PMW-18	NA	ND	NA	ND	NA	NA	NA	0.43	0.81	ND	0.47	ND
24-PMW-19	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-PMW-21	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	ND	NA	NA	NA	ND	0.5	0.55	0.42	ND
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	ND	0.58	NA	0.63	NA	NA	NA	4.6	0.82	1	0.96	0.84
24-MW-6	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	ND	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	1.9	NA	ND	NA	NA	NA	0.28	0.38	0.35	ND	0.32
24-MW-8A-2	NA	NA	0.37	ND	ND	0.47	ND	0.64	0.68	0.48	0.64	0.47
24-MW-9A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-13A	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	ND	NA	NA	NA	0.37	0.57	0.38	0.47	0.22
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-5B	2.64	5	NA	4.2	NA	NA	NA	NA	6	5.4	5.1	3.8
24-MW-8B	NA	ND	NA	ND	NA	NA	NA	0.41	ND	0.5	0.55	0.46
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-11B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-13B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-14B	NA	ND	NA	ND	NA	NA	NA	0.51	0.67	0.59	0.88	0.7*
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-16B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-19B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-20B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-21B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-23B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-25B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-27B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	1,1-DCA ^b ($\mu\text{g/L}$)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	31.1	18.6	NA	18	NA	NA	NA	15	21	24	18	19
24-PMW-2	ND	ND	NA	ND	NA	NA	ND	ND	ND	0.29	ND	ND
24-PMW-3	5.92	5.8	NA	4.3	NA	NA	NA	4.6	4.8	4.8	4	4
24-PMW-4	154	247	NA	484	NA	NA	NA	880	1,500	970	600	610
24-PMW-5	192	192	NA	326	NA	NA	NA	320	310	300	280	210
24-PMW-8	NA	0.45	ND	ND	ND	ND	ND	ND	0.35	ND	ND	ND
24-PMW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PIW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	ND	ND	ND
24-PMW-10	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-13	NA	ND	NA	ND	NA	NA	NA	DRY	ND	ND	ND	ND
24-PMW-18	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-21	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	42.7	26.9	NA	23.9	NA	NA	NA	89	24	35	30	27
24-MW-6	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	ND	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	0.5	NA	0.42	NA	NA	NA	0.43	0.5	0.47	0.42	0.39
24-MW-8A-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-MW-9A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	0.25	ND	ND	ND	ND
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-13A	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-5B	68.3	78.5	NA	82	NA	NA	NA	NA	110	91	100	93
24-MW-8B	NA	0.88	NA	0.97	NA	NA	NA	0.81	1.1	0.9	0.9	1
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-13B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-14B	NA	ND	NA	ND	NA	NA	NA	ND	ND	0.2	ND	0.25
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-16B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-19B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-20B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-21B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-23B	NA	NA	NA	ND	NA	NA	NA	ND	ND	0.35	0.38	0.43
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-27B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	1,2-DCA [†] (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	396	169	NA	220	NA	NA	NA	270	220	15	260	260
24-PMW-2	ND	4.4	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-3	ND	0.58	NA	0.81	NA	NA	NA	1.7	1.7	1.3	4.1	0.61
24-PMW-4	ND	ND	NA	2.3	NA	NA	NA	3.2	6.5	3.9	1.8	1.9
24-PMW-5	ND	ND	NA	1.8	NA	NA	NA	2	2.1	1.8	1.5	0.64
24-PMW-8	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PMW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PIW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	ND	ND	ND
24-PMW-10	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-PMW-13	NA	ND	NA	ND	NA	NA	NA	DRY	ND	ND	ND	ND
24-PMW-18	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-PMW-21	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	0.845	ND	NA	ND	NA	NA	NA	6.9	0.53	0.65	0.68	0.53
24-MW-6	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	ND	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-8A-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-MW-9A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-13A	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-5B	8.57	6.5	NA	8.9	NA	NA	NA	NA	9.3	8.8	8.8	7.2
24-MW-8B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-11B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-13B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-14B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-16B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-19B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-20B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-21B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-23B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND*
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-27B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	Benzene ¹ (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	1,620	940	NA	810	NA	NA	NA	980	650	1,200	1,100	1,100
24-PMW-2	3.69	8.7	NA	3.3	NA	NA	NA	2.8	3.5	3.4	3.4	2.2
24-PMW-3	ND	1.9	NA	2.2	NA	NA	NA	3.9	5.9	3.5	10	3.1
24-PMW-4	ND	0.57	NA	0.61	NA	NA	NA	0.55	0.64	0.46	0.38	0.47
24-PMW-5	ND	ND	NA	ND	NA	NA	NA	0.21	0.29	ND	0.2	0.36
24-PMW-8	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PMW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PIW-8-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	ND	ND	ND
24-PMW-10	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-13	NA	ND	NA	ND	NA	NA	NA	DRY	ND	ND	ND	ND
24-PMW-18	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-19	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-21	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-26	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Intermediate Zone Wells												
24-MW-2	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	ND	ND	NA	ND	NA	NA	NA	0.42	ND	ND	ND	0.27
24-MW-6	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	ND	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	ND	NA	ND	NA	NA	NA	ND	0.25	ND	ND	ND
24-MW-8A-2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-MW-9A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-13A	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-28A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-29A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-30A	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
Deep Zone Wells												
24-MW-3B	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-5B	ND	0.51	NA	0.47	NA	NA	NA	NA	0.87	0.66	0.48	0.45
24-MW-8B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-10B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-13B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-14B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-16B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-19B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-20B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-21B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-23B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-24B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-25B	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-27B	NA	NA	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-31B	NA	NA	NA	ND	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	TPHg (mg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	11.7	5.1	NA	NA	NA	NA	NA	11	9.5	6.5	6.7	5.4
24-PMW-2	0.035	0.490	NA	NA	NA	NA	NA	0.52	0.81	0.75	1.7	2.2
24-PMW-3	0.200	0.220	NA	NA	NA	NA	NA	0.22	0.34	ND	0.068	0.19
24-PMW-4	0.251	0.460	NA	NA	NA	NA	NA	0.12	0.17	ND	0.098	0.1
24-PMW-5	0.314	0.490	NA	NA	NA	NA	NA	0.074	0.083	ND	0.085	0.064
24-PMW-8	NA	NA	NA	NA	NA	NA	NA	0.021 ^m	0.027 ^m	ND	ND	0.35 ^m
24-PMW-8-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PIW-8-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	NA	NA	NA
24-PMW-10	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-PMW-13	NA	NA	NA	NA	NA	NA	NA	DRY	ND	ND	ND	ND
24-PMW-18	NA	NA	NA	NA	NA	NA	NA	NA	27 ^m	43 ^m	26 ^m	38 ^m
24-PMW-19	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND [*]
24-PMW-21	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	0.02 ^m	0.024 ^m
24-PMW-22	NA	NA	NA	NA	NA	NA	NA	1.5 ^m	5.6 ^m	2.2 ^m	2.2 ^m	2.4 ^m
24-PMW-26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Intermediate Zone Wells												
24-MW-2	0.0314	NA	NA	NA	NA	NA	NA	0.091 ^m	0.12 ^m	ND	0.049 ^m	0.03 ^{m*}
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	0.124	0.150	NA	NA	NA	NA	NA	0.036 ^m	0.05 ^m	ND	0.075 ^m	0.056 ⁿ
24-MW-6	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	NA	NA	NA	NA	NA	NA	0.14 ^m	0.14 ^m	ND	0.16 ^m	0.19 ^m
24-MW-8A-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-9A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-10A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	NA	NA	NA	NA	NA	NA	ND	0.044m	ND	ND	ND
24-MW-12A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-13A	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-28A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-29A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-30A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Deep Zone Wells												
24-MW-3B	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-5B	0.069	NA	NA	NA	NA	NA	NA	0.046 ^m	ND	0.027	0.023	
24-MW-8B	NA	NA	NA	NA	NA	NA	NA	0.28 ^m	0.29 ^m	ND	0.27 ^m	0.28 ^m
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-10B	NA	NA	NA	NA	NA	NA	NA	0.025 ^m	0.032 ^m	ND	0.032 ^m	0.034 ^{m*}
24-MW-11B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-13B	NA	NA	NA	NA	NA	NA	NA	0.19	0.18 ^m	0.21 ^m	0.21 ^m	0.21 ^m
24-MW-14B	NA	NA	NA	NA	NA	NA	NA	0.41	0.49 ^m	ND	0.4 ^m	0.38 ^{m*}
24-MW-15B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-16B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	0.044 ^m
24-MW-17B	NA	NA	NA	NA	NA	NA	NA	0.067 ^m	0.058 ^m	ND	0.045 ^m	0.05 ^{m*}
24-MW-19B	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND [*]
24-MW-20B	NA	NA	NA	NA	NA	NA	NA	NA	0.029 ^m	0.029 ^m	0.048 ^m	ND
24-MW-21B	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND
24-MW-22B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-23B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	0.032 ^m	0.065 ^{m*}
24-MW-24B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND [*]
24-MW-25B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-26B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-27B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-31B	NA	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	TPHd (mg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	3.850	1	NA	NA	NA	NA	NA	3.2	3.1	NA	2.8	2.3
24-PMW-2	0.124	0.429	NA	NA	NA	NA	NA	0.11	0.12	NA	0.29	0.3
24-PMW-3	0.274	0.260	NA	NA	NA	NA	NA	0.23	0.22	NA	0.38	0.51
24-PMW-4	0.121	0.027	NA	NA	NA	NA	NA	3.4	2.3	1.6	0.75	0.46
24-PMW-5	0.268	0.062	NA	NA	NA	NA	NA	3.4	3.5	2.1	2.5	0.46
24-PMW-8	NA	NA	NA	NA	NA	NA	NA	6.1	R	1	1.1	52
24-PMW-8-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PIW-8-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-9	NA	ND	NA	DRY	NA	NA	NA	DRY	DRY	NA	NA	NA
24-PMW-10	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-11	NA	NA	NA	NA	NA	NA	NA	2.2	3.2	2.6	1.3	1.3
24-PMW-13	NA	NA	NA	NA	NA	NA	NA	DRY	ND	ND	0.098	ND
24-PMW-18	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.096	ND	0.1
24-PMW-19	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND
24-PMW-21	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND
24-PMW-22	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-PMW-26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Intermediate Zone Wells												
24-MW-2	0.12	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	0.15
24-MW-3A	NA	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	0.178	0.011	NA	NA	NA	NA	NA	0.18	ND	ND	ND	ND
24-MW-6	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	0.168	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-8A-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-9A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-10A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11A	NA	NA	NA	NA	NA	NA	NA	ND	0.11	0.13	0.14	0.12
24-MW-12A	NA	NA	NA	NA	NA	NA	NA	0.33	0.15	0.3	0.22	0.21
24-MW-13A	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15A	NA	NA	NA	NA	NA	NA	NA	0.32	ND	ND	ND	ND
24-MW-22A	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-26A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-28A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-29A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-30A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Deep Zone Wells												
24-MW-3B	0.043	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-4B	NA	NA	NA	NA	NA	NA	NA	0.61	0.2	ND	0.25	0.39
24-MW-5B	0.118	NA	NA	NA	NA	NA	NA	NA	0.14	0.23	0.1	0.18
24-MW-8B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-9B	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-10B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-11B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-12B	NA	NA	NA	NA	NA	NA	NA	0.66	0.47	0.87	0.49	0.48
24-MW-13B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-14B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-15B	NA	NA	NA	NA	NA	NA	NA	5.5	0.68	ND	ND	ND
24-MW-16B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-17B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-19B	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND
24-MW-20B	NA	NA	NA	NA	NA	NA	NA	NA	0.13	0.12	ND	0.18
24-MW-21B	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	0.15	0.16
24-MW-22B	NA	NA	NA	NA	NA	NA	NA	4	1.9	0.33	1	0.68
24-MW-23B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-24B	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
24-MW-25B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-26B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-27B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-31B	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Sample Location	1,4-Dioxane (µg/L)											
	May-01	Dec-02	Oct-03	Nov-03/ Dec-03	Jan-04	Aug-04	Dec-04	Fall-04	Win-05	Spr-05	Sum-05	Fall-05
Shallow Zone Wells												
24-PMW-1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-2	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-3	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-4	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	310
24-PMW-5	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100
24-PMW-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-8-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PIW-8-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PIW-8-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-9	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	NA	NA	NA
24-PMW-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-13	NA	NA	NA	NA	NA	NA	NA	DRY	NA	NA	NA	NA
24-PMW-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-PMW-26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Intermediate Zone Wells												
24-MW-2	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-3A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-4A	NA	NA	NA	DRY	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-5A	737	NA	NA	NA	NA	NA	NA	1,000	92	130	110	95
24-MW-6	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-7	ND	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-8A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-8A-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-9A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-10A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-11A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-12A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-13A	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY	DRY
24-MW-14A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-15A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-22A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-26A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-28A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-29A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-30A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Deep Zone Wells												
24-MW-3B	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-4B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-5B	296	NA	NA	NA	NA	NA	NA	NA	1,700	1,100	R	790
24-MW-8B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-9B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-10B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-11B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-12B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-13B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-14B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-15B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-16B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-17B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-19B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-20B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-21B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-22B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-23B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-24B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-25B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-26B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-27B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24-MW-31B	NA	NA	NA	NA	NA	NA	NA	NA	DRY	DRY	DRY	DRY

Table 8
Summary of Key Contaminants of Concern
IRP Site 24 (Entomology Wash Rack)
Vandenberg AFB, California

Definition(s):	
DCA	- dichloroethane
DCE	- dichloroethene
DRY	- Well was dry or had insufficient water for sampling.
NA	- not analyzed
ND	- Not detected; result is less than the method detection limit.
µg/L	- micrograms per liter
mg/L	- milligrams per liter
PCE	- tetrachloroethene
R	- The data were rejected through the validation process.
TCA	- trichloroethane
TCE	- trichloroethene
TPHd	- total petroleum hydrocarbons as diesel
TPHg	- total petroleum hydrocarbons as gasoline

Note(s):	
Bold type indicates results that were above the MCL.	
a	- The MCL for PCE is 5 µg/L.
b	- The MCL for TCE is 5 µg/L.
c	- The MCL for <i>cis</i> -1,2-DCE is 6 µg/L.
d	- The MCL for 1,1-DCE is 6 µg/L.
e	- The MCL for 1,1,1-TCA is 200 µg/L.
f	- The MCL for 1,1,2-TCA is 5 µg/L.
g	- The MCL for vinyl chloride is 0.5 µg/L.
h	- The MCL for 1,1-DCA is 5 µg/L.
i	- The MCL for 1,2-DCA is 0.5 µg/L.
j	- The MCL for benzene is 1 µg/L.
k	- TPHg Compound was not detected because the sample was diluted to accommodate the extremely high PCE concentration. THTS compound is believed to have been present groundwater during fall 2005, but just below detection since dilution raised the detection limit.
m	- TPHg detected in groundwater from this well were a result of chlorinated hydrocarbons in the gasoline range since no benzene, toluene, ethylbenzene, or xylenes were detected in groundwater from this well.
n	- TPHg detected in groundwater from this well were a result of chlorinated hydrocarbons in the gasoline range since the benzene concentration is very low compared to the very high TCE and/or PCE concentration.
*	- First quarter sampled with a dedicated micropurge pump installed.